YASHICA

FX-3
FX-7

REPAIR MANUAL

YASHICA CO., LTD., TOKYO

Printed in Japan

YASHICA

FX-3
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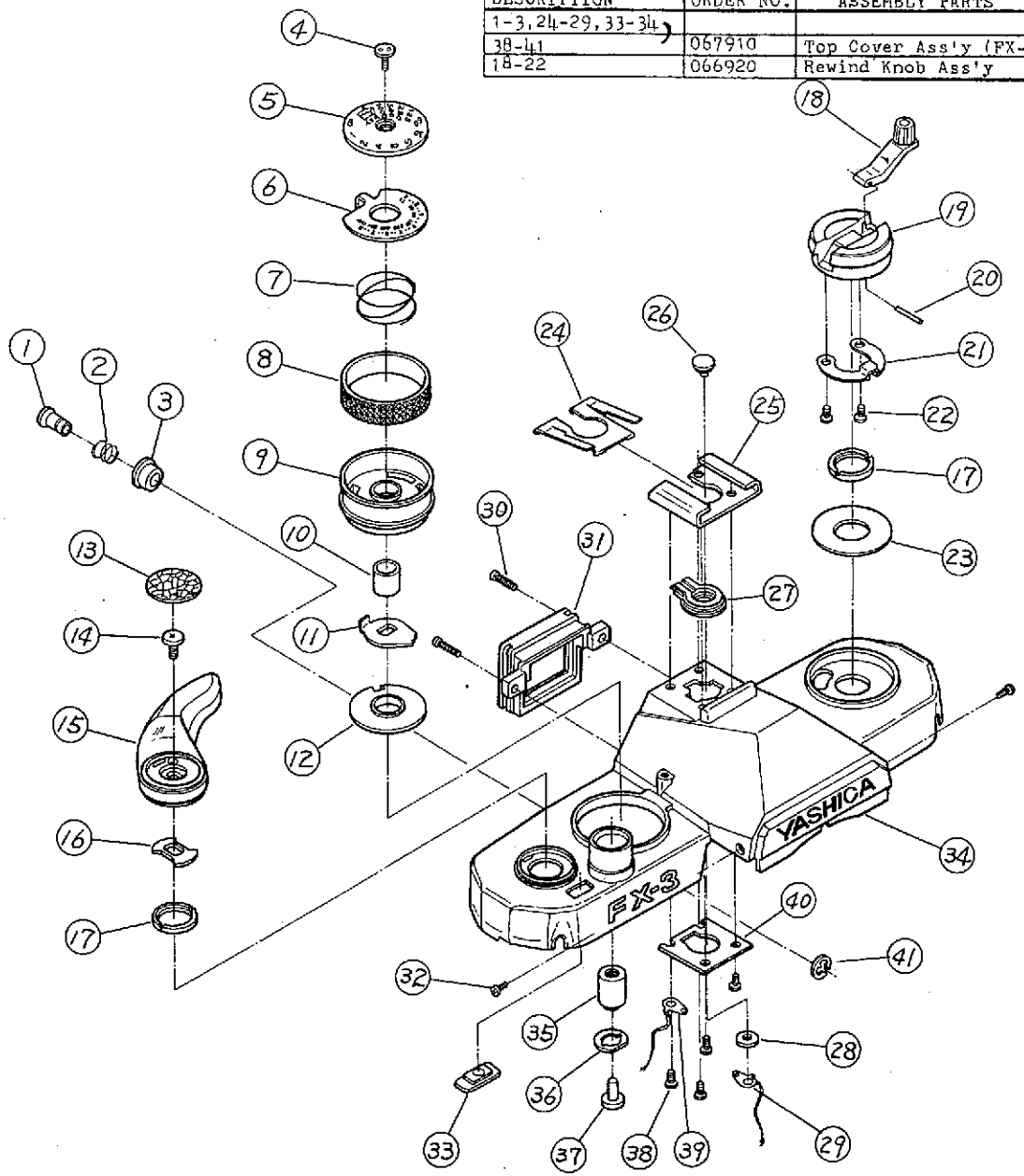
ASSEMBLING CHART

YASHICA CO., LTD.
TOKYO JAPAN

147 148

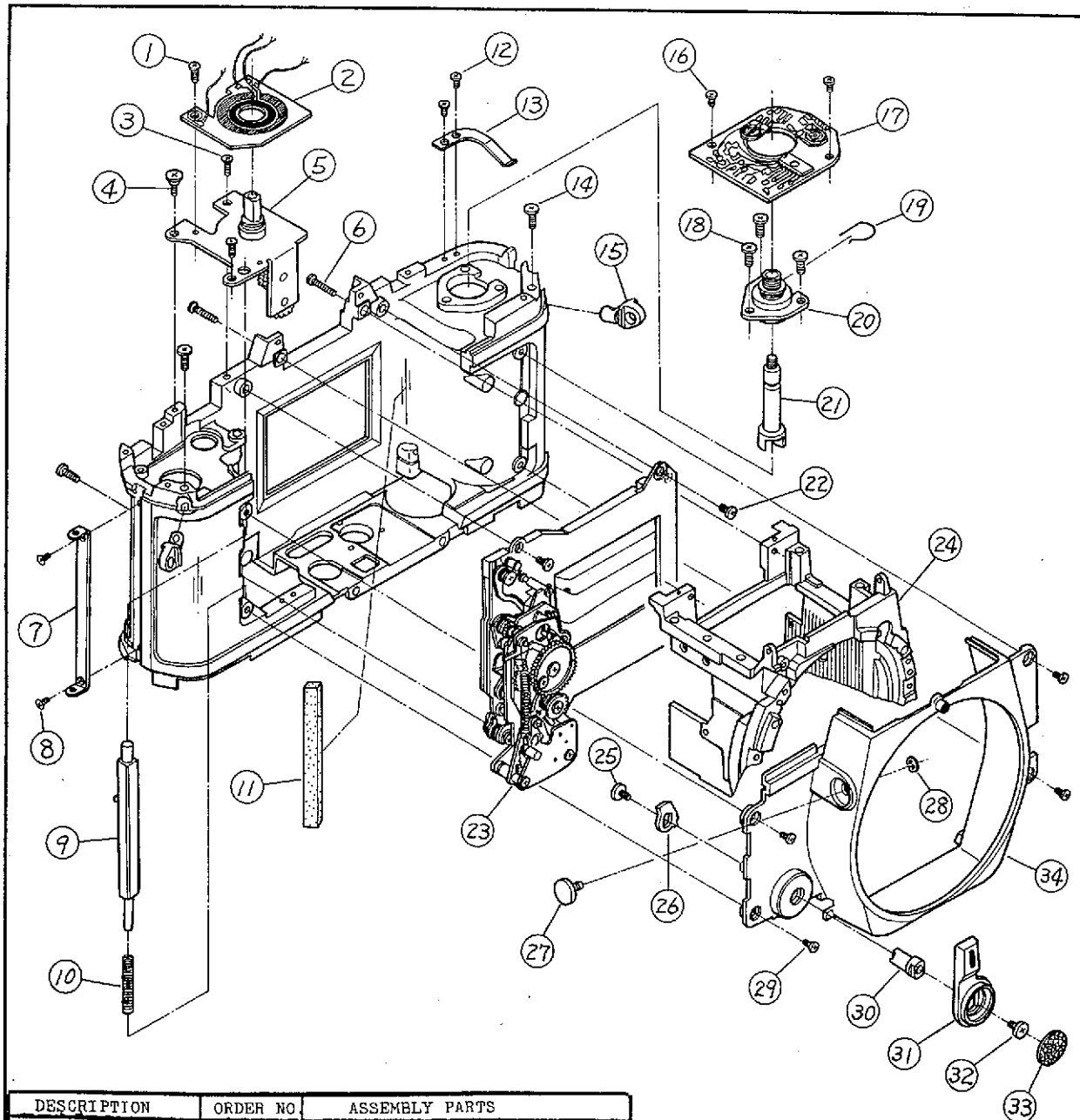


DESCRIPTION	ORDER NO.	ASSEMBLY PARTS
1-3, 24-29, 33-34 / 38-41	067910	Top Cover Ass'y (FX-7)
18-22	066920	Rewind Knob Ass'y

	PARTS NO.	DESCRIPTION	Q'TY
1	147446	EC Button	1
2	318316	Checker Button Spring	1
3	147441	EC Button Holder	1
4	133298	Name Plate S.S.	1
5	147415	Shutter Dial Name Plate	1
6	133295	ASA Name Plate	1
7	147416	ASA Spring	1
8	147442	S. Dial Cover	1
9	147418	S. Dial	1
10	147409	ASA Color	1
11	147417	ASA·Stopper	1
12	066309	S. Contact Plate Ass'y	1
13	147660	Winding Lever Leather	1
14	66001037	Winding Lever S.S.	1
15	147651	Winding Lever	1
16	147652	Winding Lever Base	1
17	147659	Top Cover Nut	2
18	147643	Crank Arm Ass'y	1
19	139368	Rewinding Knob	1
20	66670830	Crank Arm Pin	1
21	139373	Crank Arm Spring	1
22	69112554	Crank Arm Spring S.S.	1
23	147681	Rewind Shaft Cover	1
24	134128	Shoe Plate Spring (FX-3)	1
24	132128(B)	Shoe Plate Spring (FX-7)	1
25	132136	Accessory Shoe	1
26	★	Shoe Point	1
27	★	Shoe Contact	1
28	★	Shoe Point Washer	1
29	★	Lug Plate	1
30	61915529	Top Cover S.S. (2) (FX-3)	2
30	61915521	Top Cover S.S. (FX-7)	2
31	147851	Eye-Piece Frame	1
32	61903020	Top Cover S.S. (1) (FX-3)	2
32	61903021	Top Cover S.S. (FX-7)	2
33	147136	Film Counter Window	1
34	★	Top Cover (FX-3)	1
34	★	Top Cover (FX-7)	1
35	147419	Shutter Button (FX-3)	1
35	148444	Shutter Button (FX-7)	1
36	147420	Shutter Button Stopper	1
37	147421	Shutter Button Shaft	1
38	61913022	Shoe Reinforcement Plate S.S.	4
39	143112	Shoe Lug Plate	1
40	147151	Shoe Reinforcement Plate	1
41	66102525	E. Ring	1

DECRIPTION	ORDER NO.	ASSEMBLY PARTS
26 - 29	066461	Shoe Contact Ass'y
35 - 36	066165	Shutter Button Ass'y(FX-3)
35 - 36	067165	Shutter Button Ass'y(FX-7)
1 - 3, 41	066587	EC Button Holder Ass'y
1-3, 24-29, 33-34, 38-41	066910	Top Cover Ass'y(FX-3)

NOTE : (Parts with marked "★" are not Availsble)



	PARTS NO.	DESCRIPTION	Q'TY
1	61914022	S. Base Plate S.S.	1
2	066593	S. Base Plate Ass'y	1
3	61914022	S. Base Plate S.S.	2
4	147816	Lock Lever Shaft	1
5	066445	S. Base Plate Ass'y	1
6	61927024	Mirror Box S.S.	2
7	139148	Hinge Shaft Holder	1
8	61812524	Hinge Shaft Holder S.S.	2
9	147422	Shutter Shaft	1
10	147423	Shutter Shaft Spring	1
11	147206	Shutter Moquette	1
12	61912224	Lock Plate Spring S.S.	2
13	147142	Lock Plate Spring	1
14	69226054	Strap Holder S.S.	2
15	65005112	Strap Holder	2
16	61912524	Amplifier S.S.	2
17	066503	Amplifier Ass'y	1
18	6392524	Rewind Shaft Holder S.S.	1
19	147680	Rewind Shaft Spring	1
20	147677	Rewind Shaft Holder	1
21	147678	Rewind Shaft	1
22	61924022	Shutter S.S.	1
23	147201	Complete Shutter	1
24		Mirror Box	1
25	66001023	Self Charge Plate S.S.	1
26	147833	Self Charge Plate	1
27	147803	Set Off Button	1
28	66101225	E. Ring	1
29	63913024	Mount Cover S.S.	4
30	132819	Self Lever Shaft	1
31	132823	Self Lever	1
32	66001027	Self Lever S.S.	1
33	147834	Self Lever Leather	1
34	147801	Mount Cover	1

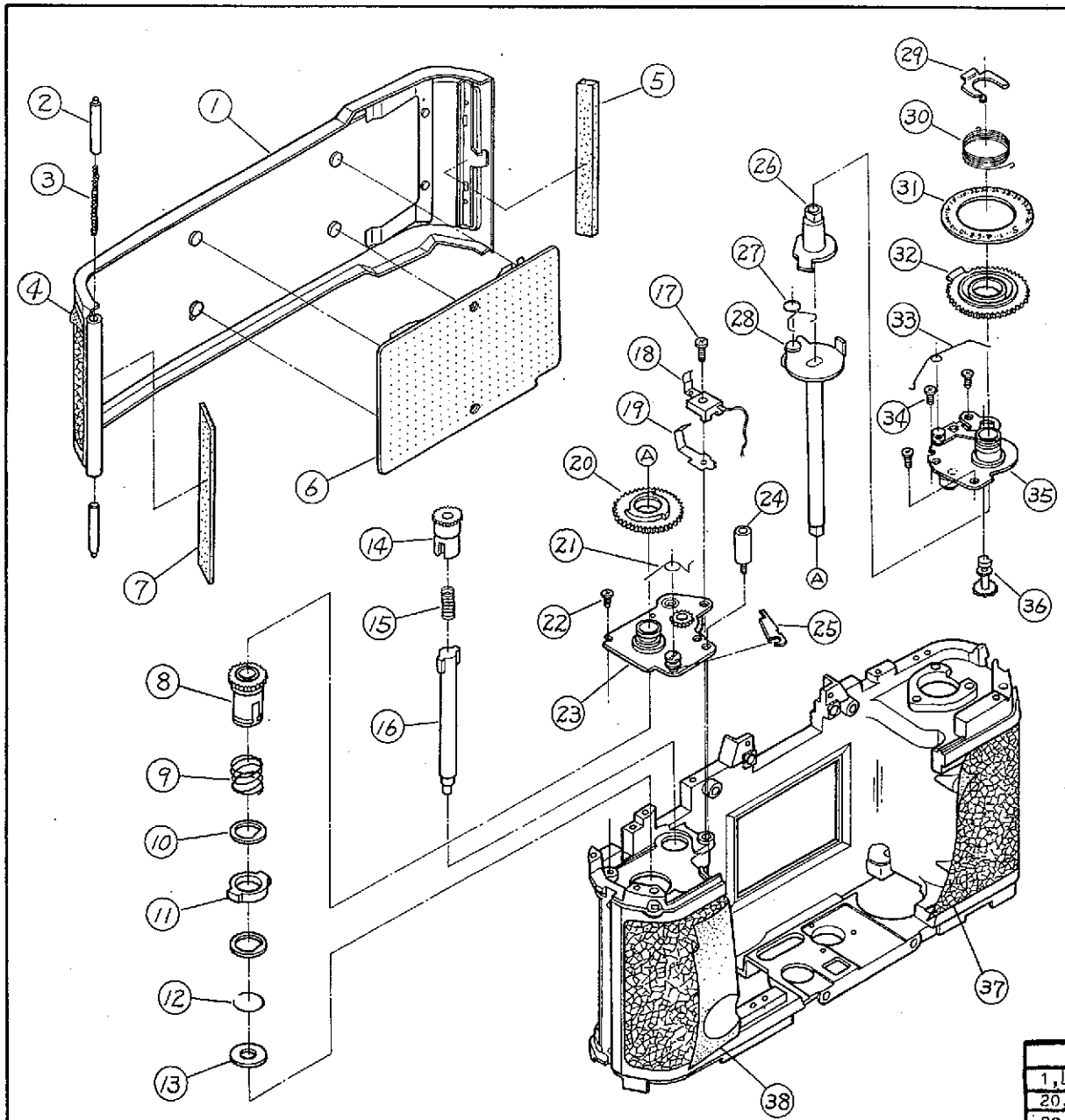
DESCRIPTION	ORDER NO	ASSEMBLY PARTS
19 - 21	066610	Rewind Shaft Holder Ass'y

147 148

NOTE : (Parts with marked "★" are not Available)

147 148

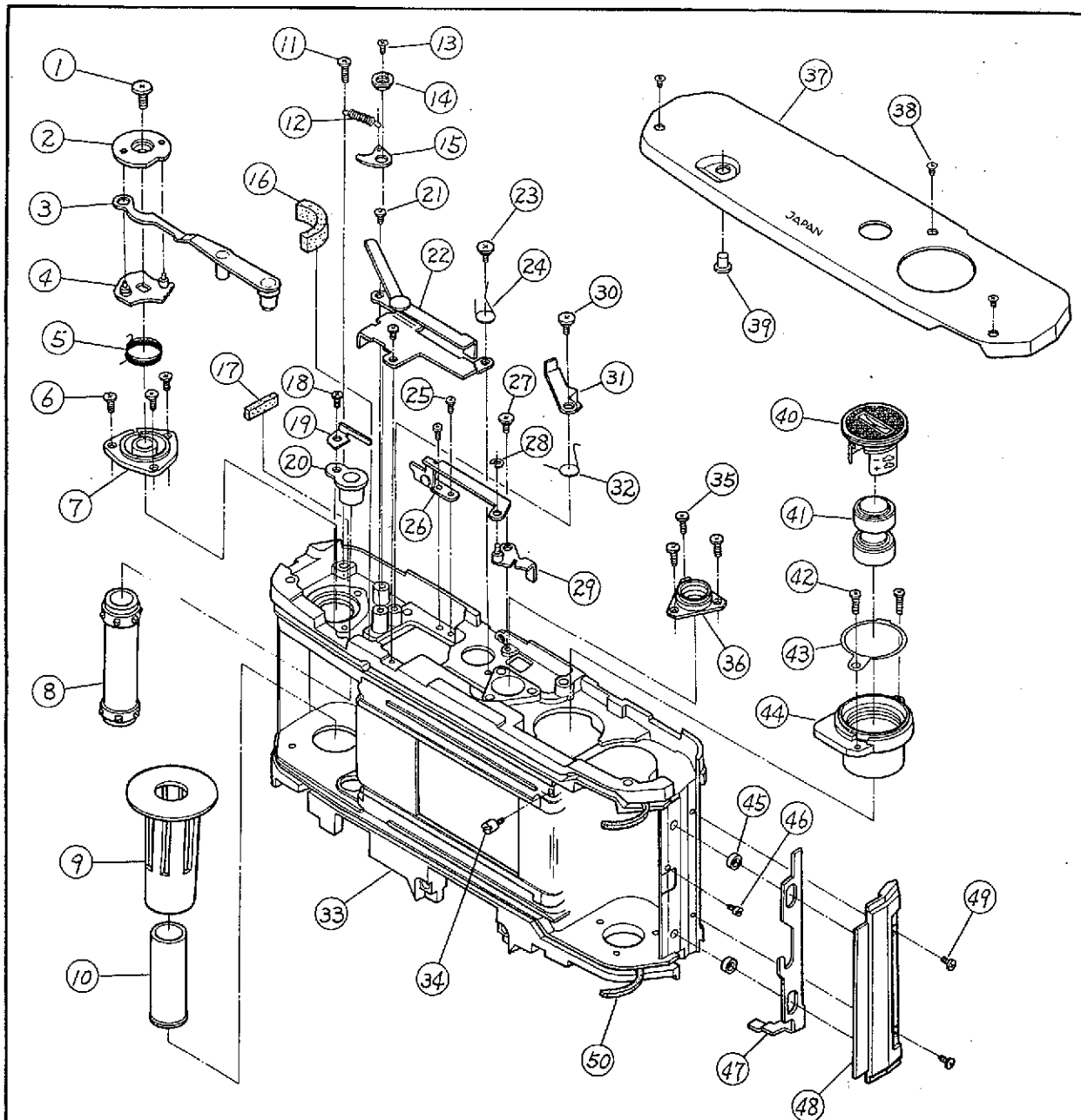
No.3



	PARTS NO.	DESCRIPTION	Q'TY
1	066286	Back Cover Ass'y	1
2	147108	Hinge Shaft	2
3	131133	Hinge Shaft Spring	1
4	147110	Back Cover Leather	1
5	132108	Back Cover Lock Moquette	1
6	066287	Pressure Plate Ass'y	1
7	147156	Hinge Moquette	1
8	147616	Spool Gear	1
9	147640	Friction Spring	1
10	139640	Friction Washer	2
11	139639	Friction Plate	1
12	147642	Spring Cover Stopper	1
13	60284110	Inside Spool Washer	1
14	139644	Sprocket Gear	1
15	139650	Sprocket Spring	1
16	139647	Sprocket Shaft	1
17	63915524	EC Switch S.S.	1
18	066675	EC Switch Ass'y	1
19	147425	EC Contactor (2)	1
20	147603	A Gear	1
21	147619	A Gear Stopper Spring	1
22	61913024	W. Base Plate S.S.	1
23	066200	W. Base Plate Ass'y	1
24	147620	S. Base Plate Post	1
25	147611	A Gear Stopper	1
26	066645	Lever Feeding Plate Ass'y	1
27	147625	Rachet Claw Spring	1
28	066615	Winding Stopper Ass'y	1
29	147866	Counter Spring Post	1
30	147867	Counter Spring	1
31	147864	Counter Name Plate	1
32	147865	Counter Gear	1
33	147870	Counter Reverse Lever Spring	1
34	61913024	Counter Base Plate S.S.	3
35	066830	Counter Base Plate Ass'y	1
36	139887	Counter Gear (1)	1
37	147115	Front Leather(Right)	1
38	147116	Front Leather (Left)	1

DESCRIPTION	ORDER NO	ASSEMBLY PARTS
1,4,5,7.	066286	Back Cover Ass'y
20, 23	066200	W. Base Plate Ass'y
29, 30, 32, 35	066830	Counter Base Plate Ass'y
8 - 12	066601	Spool Gear Ass'y

NOTE : (Parts with marked "★" are not Available)



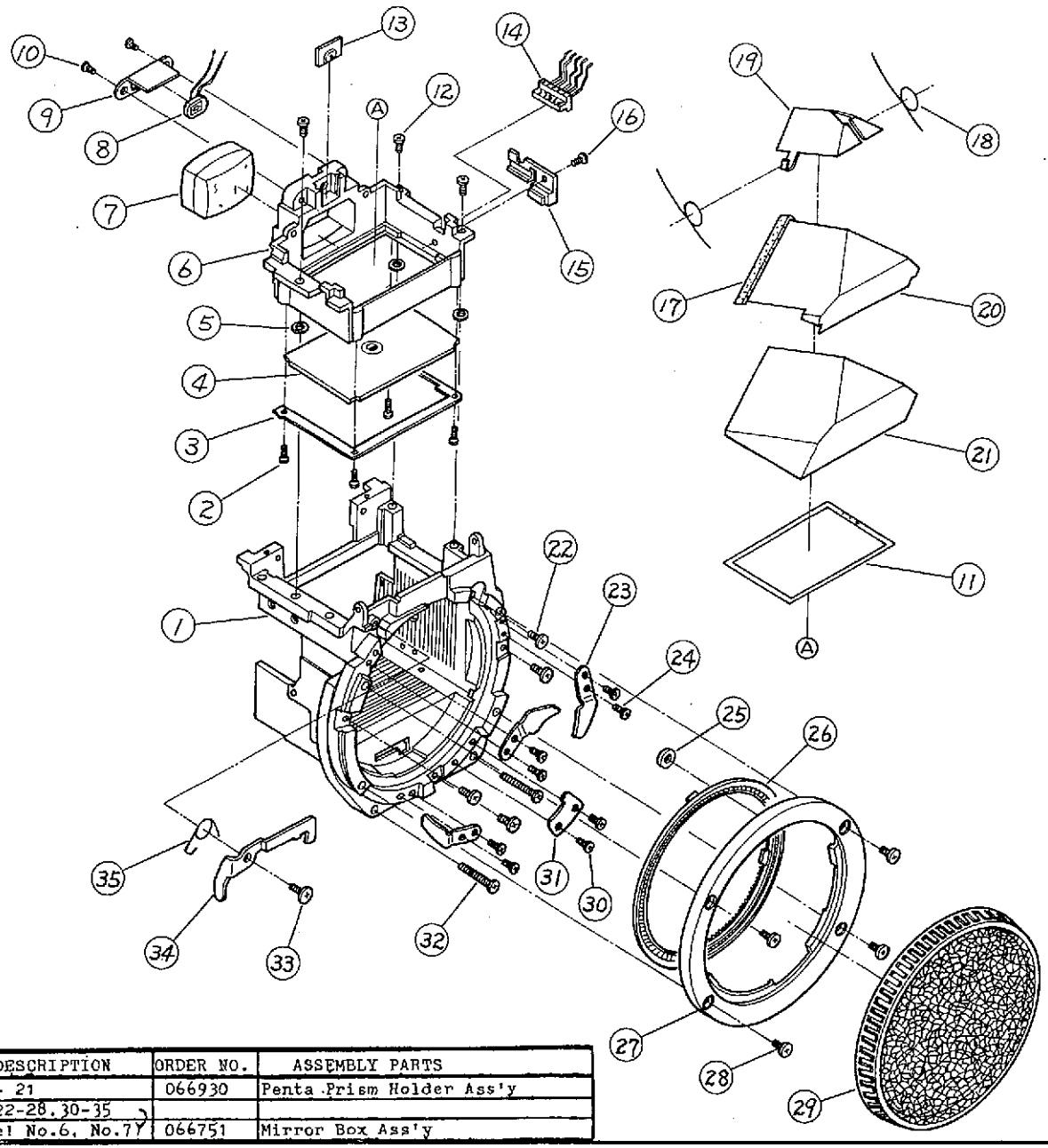
	PARTS NO.	DESCRIPTION	Q'TY
1	66001037	Set Cam Fixer S.S.	1
2	147610	Set Cam Fixer	1
3	065711	SM Set Lever Ass'y	1
4	066617	Set Cam Plate Ass'y	1
5	147632	Winding Spring	1
6	63913024	Winding Shaft Holder S.S.	3
7	147631	Winding Shaft Holder	1
8	139648	Sprocket	1
9	139641	Outside Spool	1
10	305658	Inside Spool	1
11	61915524	Anti-Rewind Spring Post	1
12	147636	Anti-Rewind Claw Spring	1
13	61814024	Anti-Rewind Claw Collar S.S.	1
14	147637	Anti-Rewind Claw Collar	1
15	147638	Anti-Rewind Claw	1
16	147203	Shutter Moquetto (1)	1
17	147205	Shutter Moquetto (2)	1
18	63912524	Sprocket Reverse Spring S.S.	1
19	147630	Sprocket Reverse Spring	1
20	139646	Sprocket Metal	1
21	61913024	Cocking Arm Fixer S.S.	2
22	066616	Cocking Arm Fixer Ass'y	1
23	147437	SR Lever Shaft (3)	1
24	147614	Winding Stopper Lever Spring	1
25	61912224	SR Lever (1) Support S.S.	2
26	066306	SR Lever (1) Support Ass'y	1
27	147437	SR Lever (3) Shaft	1
28	66101225	E. Ring	1
29	066307	SR Lever (3) Ass'y	1
30	147437	SR Lever (3) Shaft	1
31	147439	SR Lock Lever	1
32	147440	SR Lock Spring	1
33		Body	1
34	147105	Film Guide Pin	1
35	61924022	Tripod Socket S.S.	3
36	139144	Tripod Socket	1
37	147120	Bottom Cover (FX-3)	1
37	148121	Bottom Cover (FX-7)	1
38	131391	Bottom Cover S.S.(FX-3)	3
38	61812521	Bottom Cover S.S. (FX-7)	3
39	139651	Sprocket Button	1
40	065930	Battery Cap Ass'y	1
41		Battery (G - 13)	2
42	61914522	Battery Case S.S.	2
43	139154	Battery Case Contact Plate(B)	1
44	066110	Battery Case Ass'y	1
45	147107	Lock Plate Collar	2
46	131119	Back Cover Lock Claw Guide	1
47	139120	Back Cover Lock Plate	1
48	147106	Lock Plate Cover	1
49	61912524	Lock Plate Cover S.S.	2
50	147153	Body Light-Proof Moquetto	2

147 148

NOTE : (Parts with marked "★" are not Available)

147 148

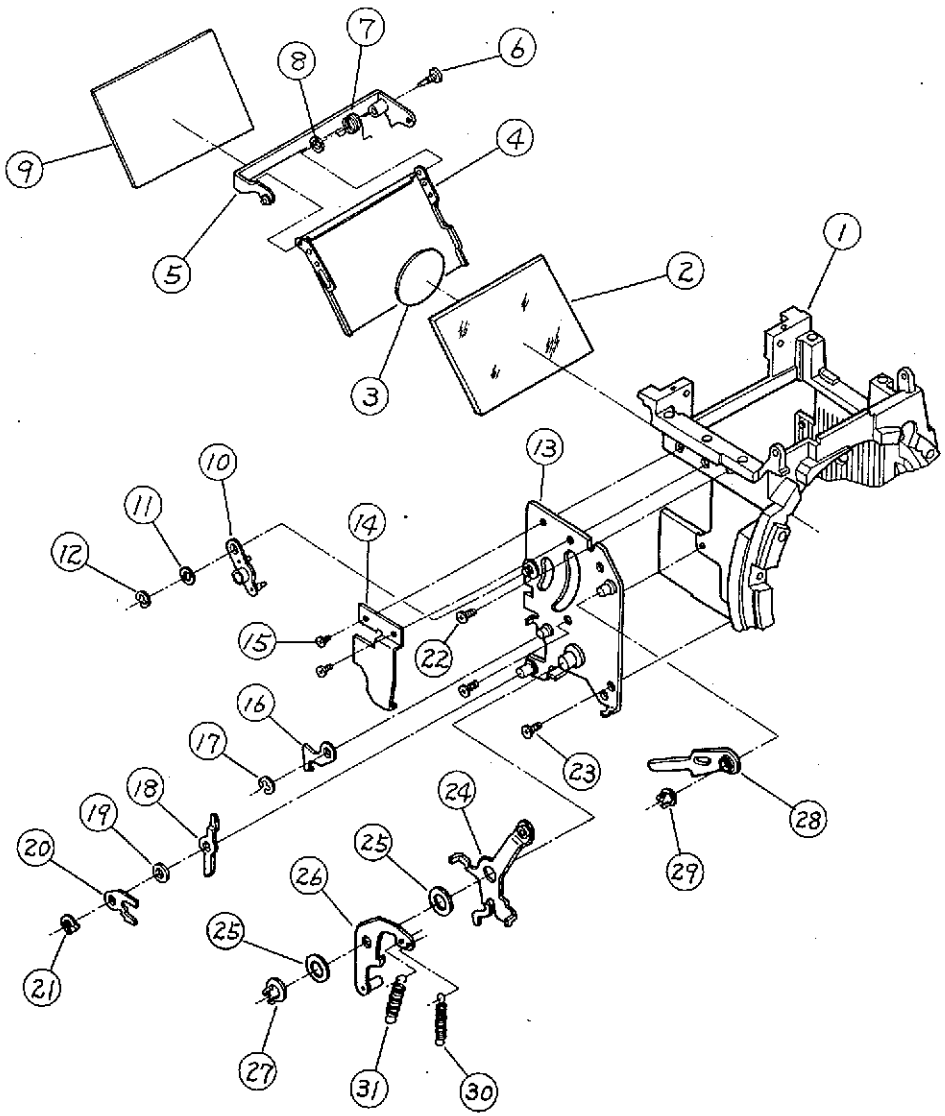
No.5



	PARTS NO.	DESCRIPTION	Q'TY
1	★	Mirror Box	1
2	69103564	Focusing Glass Fixer S.S.	4
3	147840	Focusing Glass Fixer	1
4	147839	Focusing Glass	1
5	60111810	60121810, 60131810 (Select)	-
6	147835	Penta Prism Holder	1
7	147848	Eye-Piece Lens	1
8	147503	S.P.D.	1
9	147847	S.P.D. Fixer	1
10	69102564	S.P.D. Fixer S.S.	2
11	147841	Finder Mask Frame	1
12	61914024	Penta Prism Holder S.S.	3
13	142819	Light-Gathering Lens	1
14	147504	L E D	1
15	147842	LED Fixer	1
16	69103564	LED Fixer S.S.	1
17	147881	Penta Dust-Proof Moquette	1
18	147838	Penta Prism Fixer Spring	2
19	139862	Penta Prism Fixer	1
20	147837	Penta Cap	1
21	147836	Penta Prism	1
22	66001041	F. Stop Connecting Ring S.S.	4
23	139812	Mount Spring	3
24	61913024	Mount Spring S.S.	6
25	132489	Insulation Collar	1
26	139823	F. Stop Connecting Ring	1
27	147821	Body Mount	1
28	131177	Body Mount S.S.	4
29	128118	Body Cap	1
30	61913024	Mount Stopper S.S.	2
31	139813	Mount Stopper	1
32	132143	Strap Holder S.S.	2
33	147816	Lock Lever Shaft	1
34	139815	Lock Lever	1
35	147817	Lock Lever Spring	1

DESCRIPTION	ORDER NO.	ASSEMBLY PARTS
2 - 21	066930	Penta Prism Holder Ass'y
1.22-28.30-35		
(See! No.6, No.7)	066751	Mirror Box Ass'y

NOTE : (Parts with marked "★" are not Available)



	PARTS NO.	DESCRIPTION	Q'TY
1	★	Mirror Box	1
2	147791	Mirror	1
3	139774	Mirror Tape	1
4	065741	M Frame Ass'y	1
5	065253	ML-3 Ass'y	1
6	139796	M. Pin (2)	1
7	139798	M. Spring	1
8	60111513	60121513, 60131513 (Select)	-
9	139799	M. Frame Light-Proof Sheet	1
10	065214	MCL-4 Ass'y	1
11	60311510	MCL-4 Washer	-
12	66101225	E. Ring	1
13	066195	MC Base Plate Ass'y	1
14	147773	MC Light-Proof Plate	1
15	61901424	MC Light-Proof Plate S.S.	2
16	139770	MCL-5	1
17	66101525	E. Ring	1
18	139771	MCL-6	1
19	147766	MCL-6,7 Spacer	1
20	147772	MCL-7	1
21	66172024	E. Ring	1
22	61912024	MC Base Plate Ass'y S.S.	2
23	61812524	" "	1
24	065212	MCL-2 Ass'y	1
25	60223125	MCL-1,2. Fixer Washer	2
26	065297	MCL-1 Ass'y	1
27	66172024	E. Ring	1
28	065213	MCL-3 Ass'y	1
29	66172024	E. Ring	1
30	139761	MC Restore Spring	1
31	139760	MC Driving Spring	1

DESCRIPTION	ORDER NO	ASSEMBLY PARTS
2 - 9	066741	M. Frame Ass'y
13,16-21,24-31	066195	MC Base Plate Ass'y
1 - 31(See!No.5 No.7)	066751	Mirror Box Ass'y (S-M5,M7)

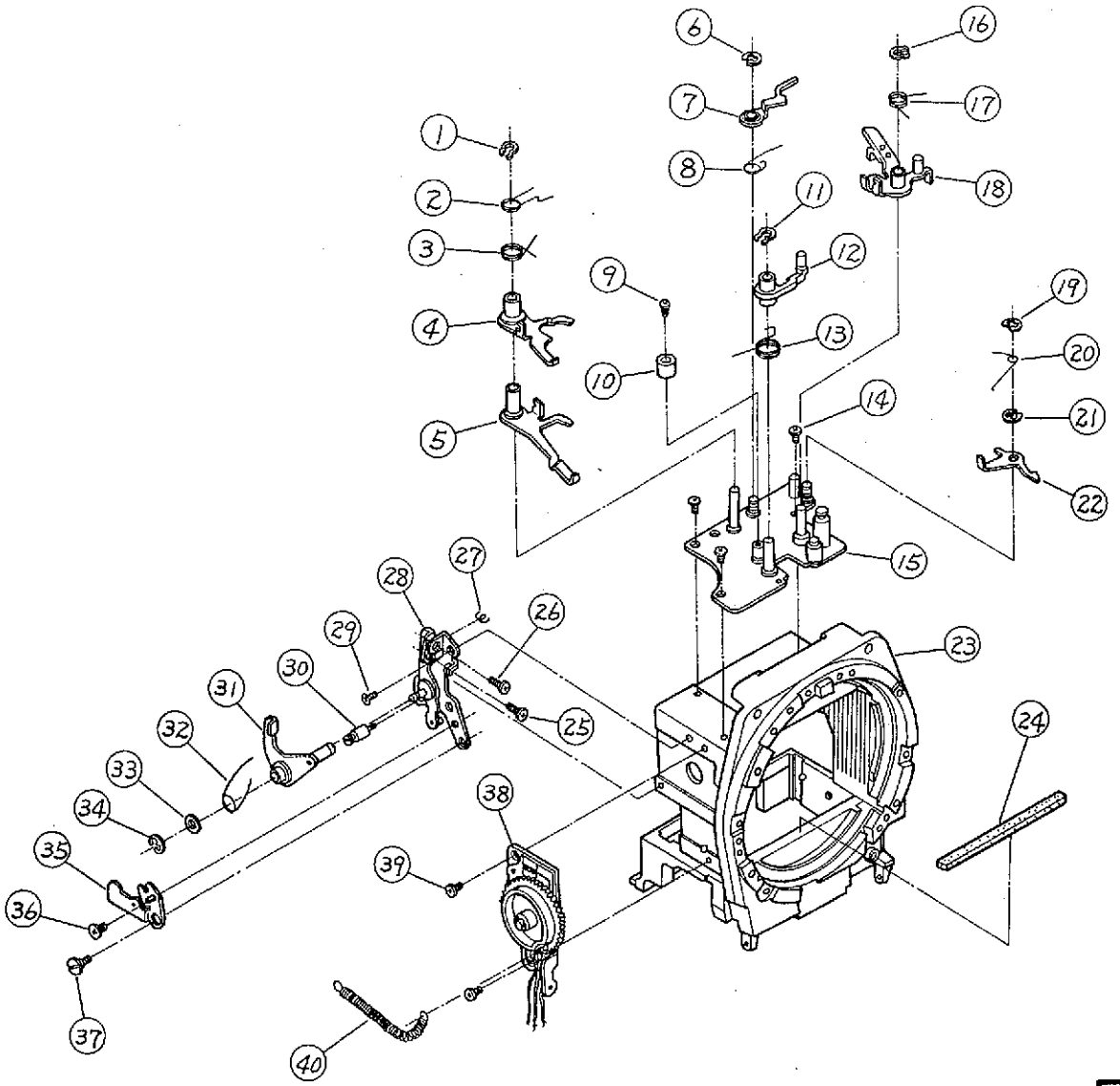
147 148

NOTE : (Parts with marked "★" are not Avsilable)

No.6

147 148

No.7



	PARTS NO.	DESCRIPTION	Q'T
1	66172024	E. Ring	1
2	139721	QRL-2 Spring	1
3	139724	QRL-3 Spring	1
4	065202	QRL-2 Ass'y	1
5	065203	QRL-3 Ass'y	1
6	66101525	E. Ring	1
7	065205	QRL-5 Ass'y	1
8	139730	QRL-5 Spring	1
9	63902024	QR Stoppen S.S.	1
10	147710	QR Stoppèr	1
11	66172024	E. Ring	1
12	147725	QRL-4	1
13	147727	QRL-4 Spring	1
14	61912024	QR Base Plate Ass'y S.S.	3
15	066197	QR Base Plate Ass'y	1
16	66172024	E. Ring	1
17	139716	QRL-1 Spring	1
18	065201	QRL-1 Ass'y	1
19	66101525	E. Ring	1
20	139732	QRL-6 Spring	1
21	66101525	E. Ring	1
22	139731	QRL-6	1
23		Mirror Box	1
24	147787	Mirror Cushion	1
25	63913024	ML-4 S.S.	1
26	63914022	ML Base Plate S.S.	1
27	139833	ML Base Plate Spring	1
28	065250	ML Base Plate Ass'y	1
29	61812524	ML Base Plate Ass'y S.S.	1
30	147831	Aperture Resistor Spring Post	1
31	065255	ML-5 Ass'y	1
32	139808	ML-4,5 Spring	1
33	60112110	128666, 128667 (Select)	-
34	66101525	E. Ring	1
35	139809	ML-6	1
36	63911524	S.S.	1
37	139834	ML-6 S.S.	1
38	147006	AVR Ass'y	1
39	61912224	AVR Ass'y S.S.	2
40	147830	Aperture Resistor Spring	1

DESCRIPTION	ORDER NO.	ASSEMBLY PARTS
1 - 22	066197	QR Base Plate Ass'y
25 - 34	065250	ML Base Plate Ass'y
1-34(See No.5,No.6)	066751	Mirror Box Ass'y

NOTE : (Parts with marked "★" are not Available)

Removal of Top and Base Covers

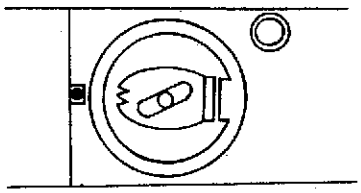
Removal of Base Cover

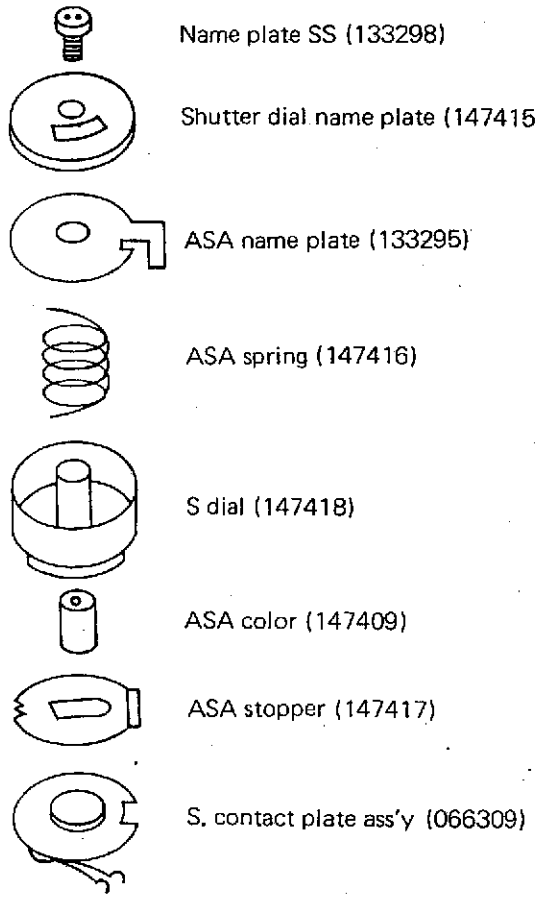
Cautions: There are possibilities that the sprocket lower R button may be undone because the adhesives applied to it lose resistance to separation, so that be sure not to miss it.

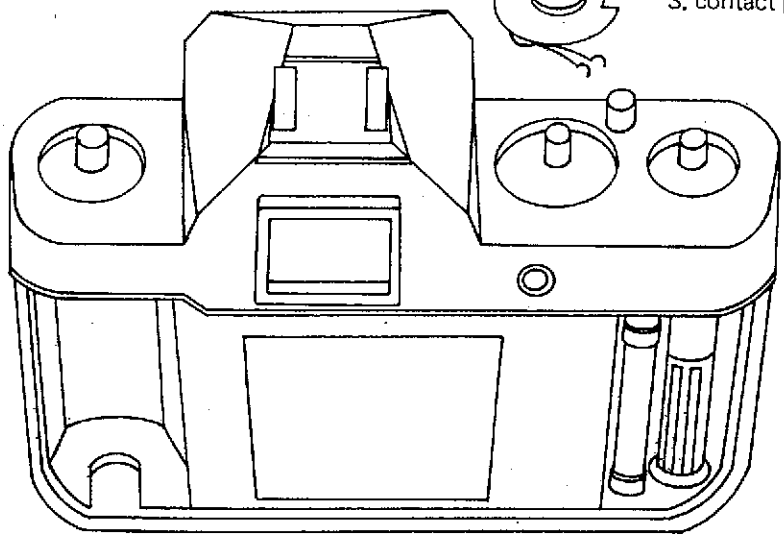
Removal of Top Cover

1. Peel off the W lever leather (147660).
2. Remove the W lever SS (66001037), and take off the W lever (147651) and the lever mount (147652).
   Cautions: The W lever SS is of the left-handed screw.
3. Remove the top cover nut (147659). Begin removal of the shutter dial. Set the shutter dial at 1/1000, and ASA at 100, then start the following work.
4. Remove the name plate SS (133298).
   The disassembling procedure is as illustrated in the right figure.

ASA100
shutter 1/1000







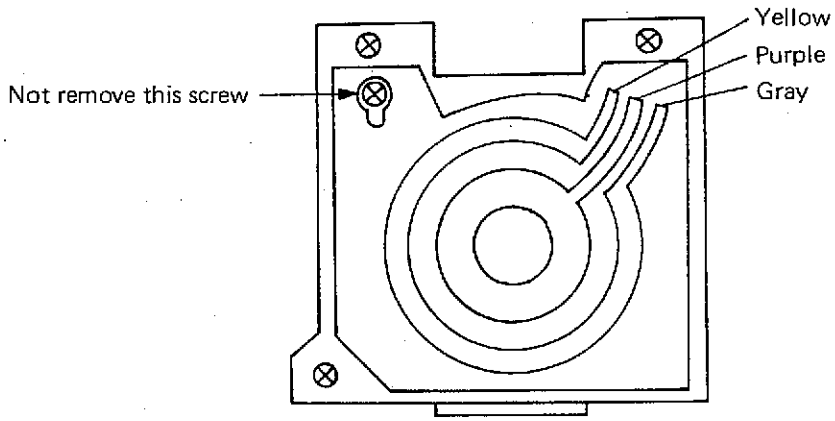
5. Remove the rewind knob ass'y (066920).
   Cautions: Use the root of the tweezers but not the screw driver for removing the rewind shaft fork.
6. Take off the top cover nut (on the rewind side) (147659); as a result, the rewind shaft cover (147681) will be removed.
7. Remove two pieces of top cover SS' (61915529) (2) and (61903020) (1), respectively; four pieces in total.
8. Gently separate the top cover ass'y (066920) from the body. Face the surface of the mount base upward, hold the top cover by the right-hand , and remove it by lightly rolling.
9. Disconnect the soldered synchro lead wires (black and light brown) inside the top cover.

Removal of Front Leather

1. Peel off the self-lever leather (147834).
2. Remove the self lever SS (66001027) and (132823).
3. Peel off the front leather, right (147115) and the front leather, left (147116).

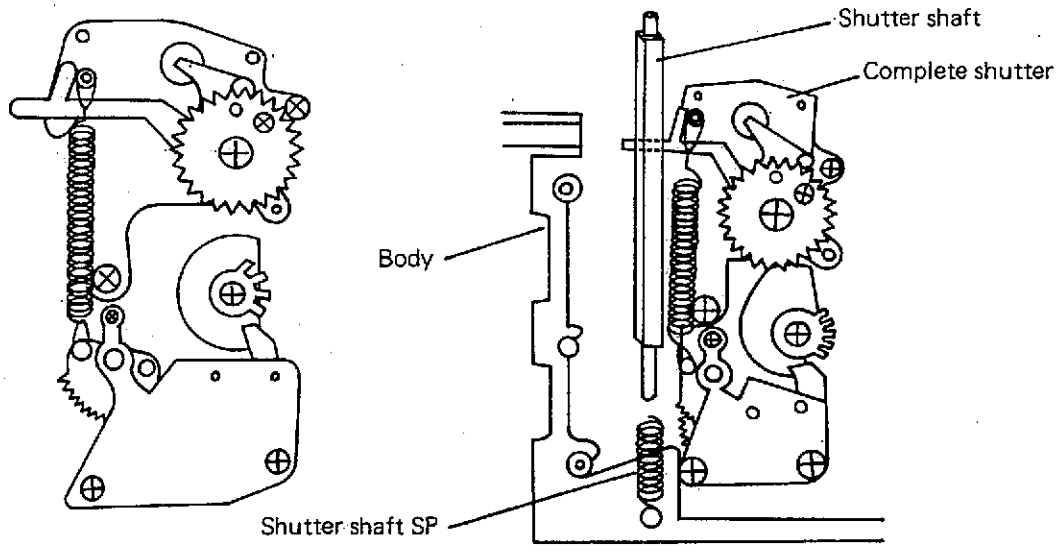
Removal of Shutter Base Plate

1. Remove 2 shutter base plates SS (61914022) and a lock lever shaft (147816).



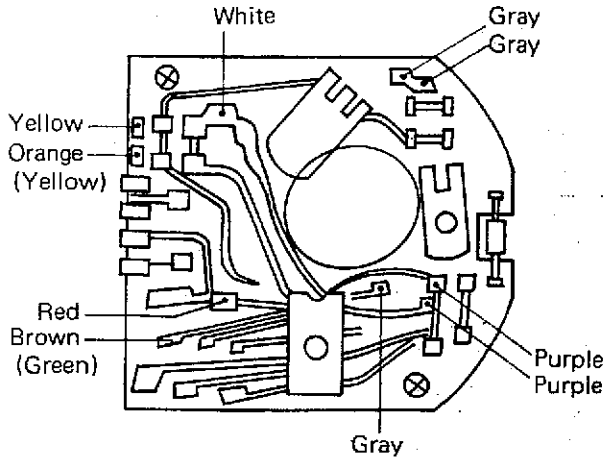
2. Remove the solder of the lead wires, yellow, violet and gray.
3. Remove the shutter base plate (066445).
4. The shutter shaft is removed. (147422)
   The shutter shaft spring is removed. (147423)

Shutter speed set at 1/1000



Removal of AMP Ass'y

1. Remove the solder of each lead wire.
2. Remove 2 AMP substrates SS (61912524).
3. Remove the solder of 5 legs of LED.



Removal of Mirror Box Ass'y

1. Remove 4 body mount SS (131177) and body mount (147821).

Cautions: (1) The standard position when assembling: At the back cover of the mount ring, the insulating collar (132489) is made to agree with the red mark put on the mount cover.

(2) In some cases, the adjusting washer is inserted in the lower side of the mount ring, so that care should be used not to lose the washer.

2. Remove 4 mount covers SS (63913024) and a mount cover (147801).
3. Remove 3 mirror boxes SS (61927024) and 2 strap holder SS (132143).
4. While lifting AMP, pull out the mirror box ass'y forward and remove it.

Removal of Counter Frame

1. Remove counter reverse lever spring (147870) engaging with the counter gear (1) (139887).
2. Remove 3 counter base plate SS (61913024) and take it out upward to remove.

Removal of Shutter Ass'y

1. Remove 3 shutter attachment screws (61924022). (One of the screws is tightened through the back cover.)
2. Pull out the shutter ass'y (147201).

. . . . . .

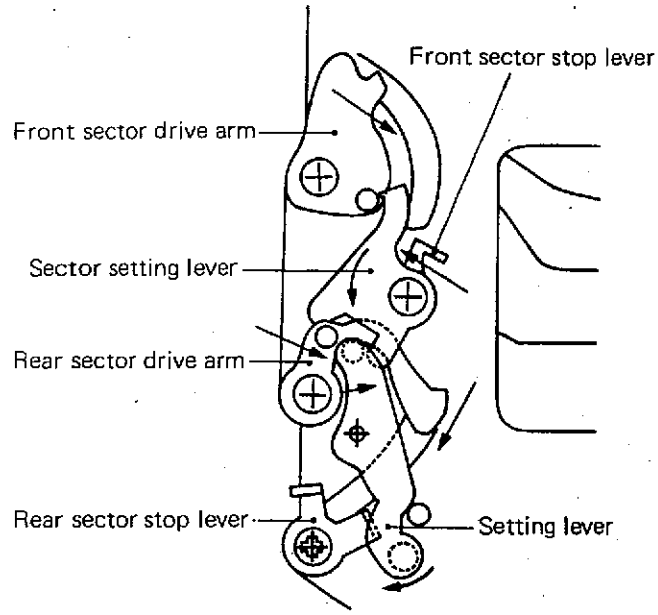
Sector Setting

(1) Turn the setting lever clockwise by use of the set pin. (Due to the operation of the winding lever, S set-pin on the body side pulls the set pin.)

(2) Turn the sector setting lever counterclockwise by use of the upper pin of the setting lever.

(3) The sector setting lever is caught by the pins of both front and rear sector drive arms and turns them clockwise. When both drive arms turn, the sector descends.

(4) When both drive arms are full set, the front and rear sector stop levers plunge into the drive arms so that the latter' return is stopped. With the above operations, the setting of the sector ends.



Faults that may occur

Setting failure.

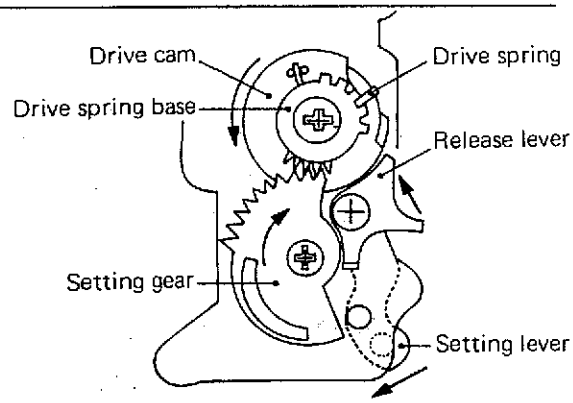
The stop levers do not plunge into the arms. (Due to short setting, or moving failure of the stop levers.) In this event, viewing from the film side, the rear sector returns (ascends) when the winding lever returns.

Setting of Drive Cam

(1) When the setting lever is set (rotated clockwise), the pin pushes the setting gear; as a result, the latter is turned clockwise.

(2) The setting gear rotates the gear on the lower side of the drive cam with which the setting gear engages, and then, the drive cam counterclockwise.

(3) When the gear is full rotated, the release lever plunges in the drive cam, and then it stops.



Operation of Shutter

(1) The release lever is pushed down by MCL-7 of the mirror box, and the hook is separated from the drive cam.

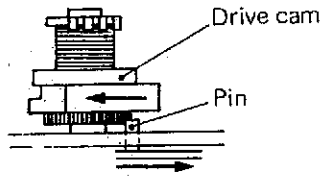
(2) The drive cam rotates clockwise due to the restoring force of the drive spring, and the pin is pushed out to the outside.

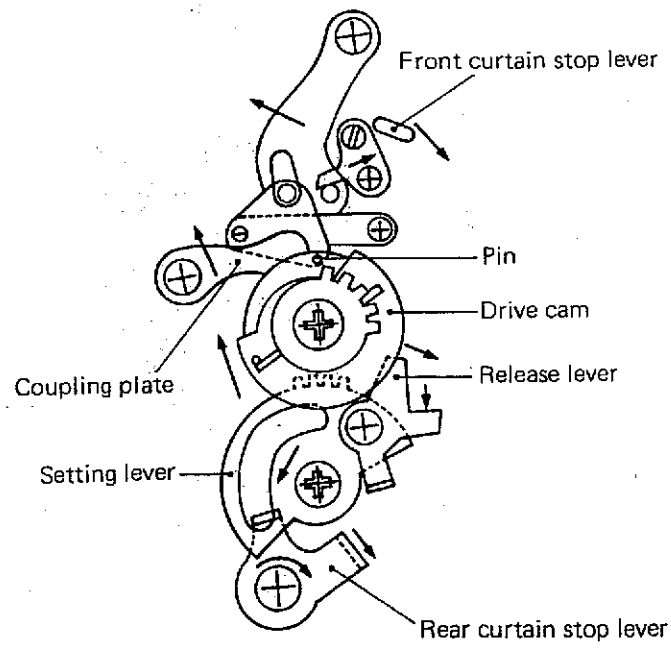
(3) Rotate clockwise the front curtain stop lever through 3 parts from the pin to the front curtain stop lever to release the front sector drive arm; thus, the front curtain is opened.

(4) When the drive cam hits against the coupling plate, the governor works and the coupling plate is released.

(5) The drive cam is separated from the coupling plate, the setting lever turns counterclockwise and swings the rear curtain stop lever clockwise, releasing the rear sector drive arm.

(6) The rear curtain advances and the shutter closes.





Operation of Bulb

(1) When the speed change gear is set at B, the convex of B lever is set to the concave of B cam below the gear.

(2) When depressing the release button, B lever descends and is set to the concave of B cam as in the case of (1); the lever descends lower than other shutter speeds. The low speed governor gear is locked at the upper side of B lever.

(3) The mirror box works, the shutter is released, the drive cam rotates, and it stops when hitting against the coupling plate. (The front sector advances before the hit against the coupling plate.) However, as the low speed governor is locked by B lever, the operation stops here.

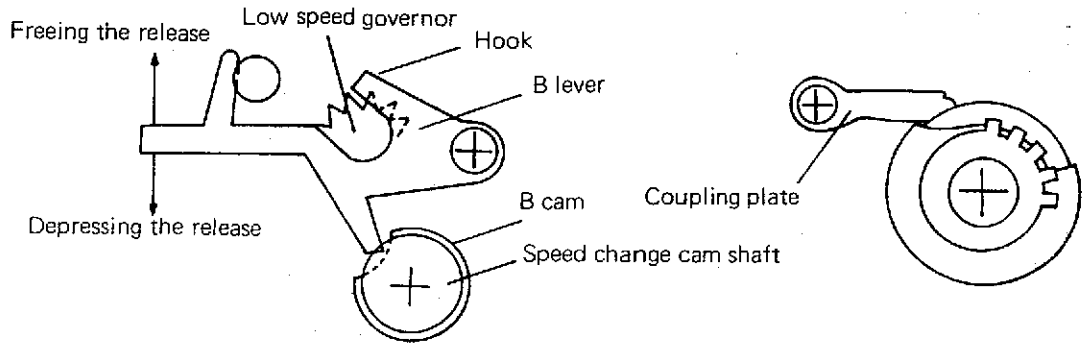
(4) When lifting (freeing) the release, B lever ascends, the low speed governor is unlocked, freed and comes to rotate, then the coupling plate gradually gets away.

* Other operations are the same as the ordinary ones.

Faults that may occur

The shutter fails to close.
Bulb skipping

Because of the flatness of B lever being dissatisfactory, it does not return.
(Change the release-position by SR lever (3) below the body. Change the bending angle of the hook of B lever.)



Self-Timer

Operation of setting

(1) When lowering the pin of the sector gear to which the timer spring is applied, the release lever B plunges into the drive cam.

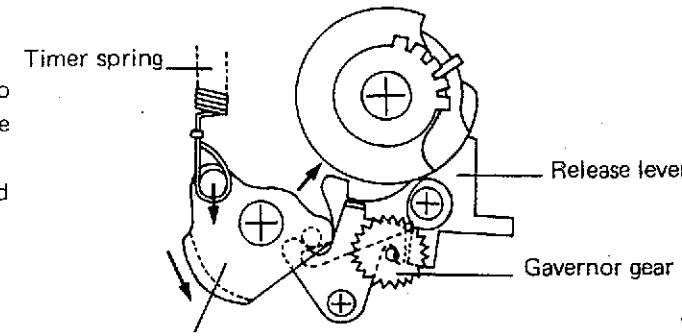
(2) The timer stop lever rotates clockwise, and locks the governor gear.

Operation of release

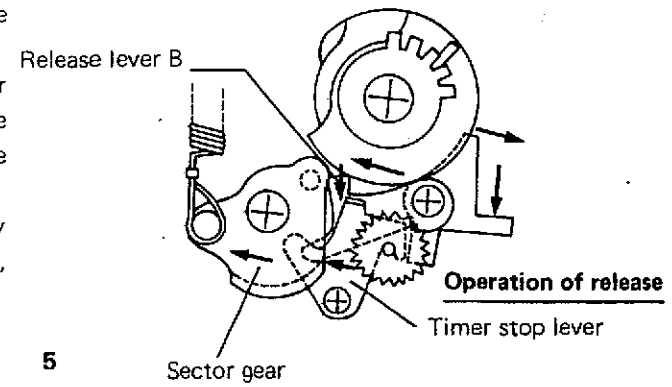
(1) When pushing down the release lever, it is separated from the drive cam. However, because the release lever B being hooked, the drive cam does not rotate.

(2) Further push the release lever, and the timer stop lever turns counterclockwise, so that the governor gear being freed, it rotates. The sector gear returns clockwise, too.

(3) Push down the release lever B immediately before the ending of return of the sector gear, and the drive cam is freed and rotates.



Operation of setting

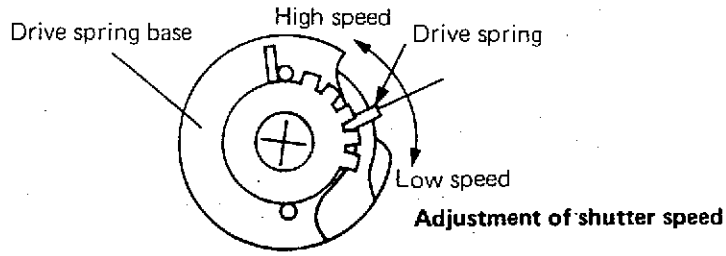


Operation of release

Adjustment of Shutter

Adjustment of shutter speed

The drive spring engages with the drive spring base; yet its position is to be moved. However, the shutter speeds change in the same tendency from high speed down to low speed. For example, such defects as a second being over and 1/125 sec being under cannot be repaired.

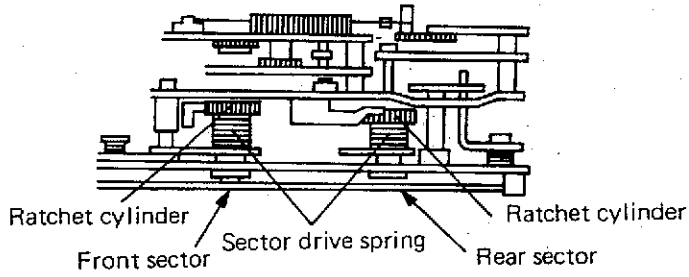


Adjustment of shutter speed

Adjustment of curtain travel

The tension of the drive spring is changed by turning the ratchet cylinder (by use of a minus (—) screw driver). This repair is possible only in the case of the shutter single, where it is impossible to measure shutter speeds, so that the repair must be carried out depending on intuition.

* When adjusting the curtain travel, be sure to confirm shutter speeds.



Adjustment of curtain travel

Operation of Shutter

Phenomenon

When setting the shutter at 1/1000 and pressing the shutter button, the upper half darkens and the shutter speed becomes fast. The front curtain travel is slow.

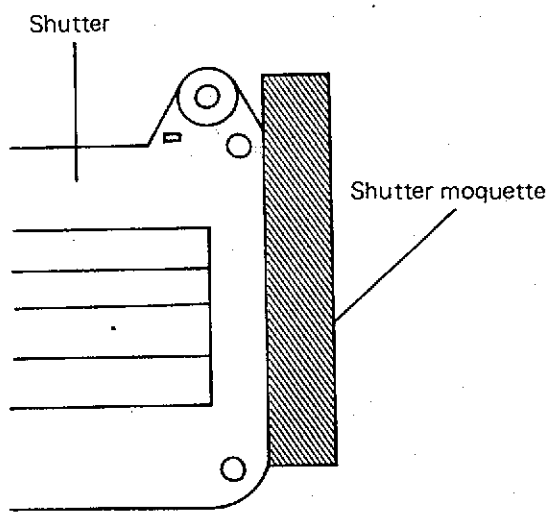
Cause

The shutter moquette (147206) enters the inside of the shutter, and contacts with the front curtain when the latter works.

Although the cause varies with individual shutters, troubles occur in case the end of the front curtain projects 0.1 to 0.2 from the frame supporting the sector at front and back.

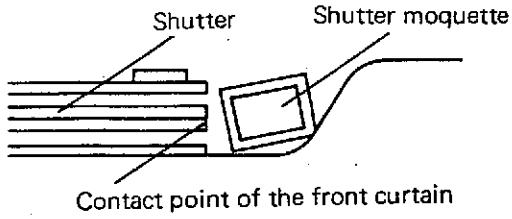
Reparing tequnicues and method of confirmation

- When sticking the moquette between the body and the shutter, stick it lightly lest it should be pushed in. It should be sticked such that it is placed as close to the body side as possible and the top of the shutter side of mold plane becomes low.

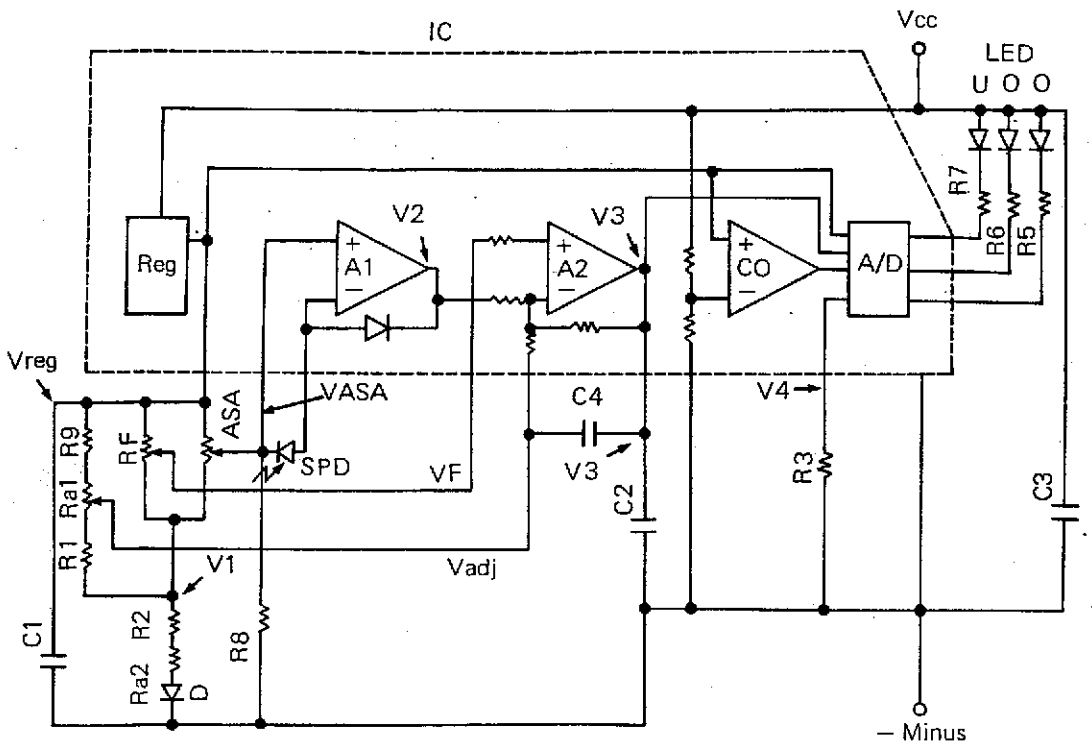


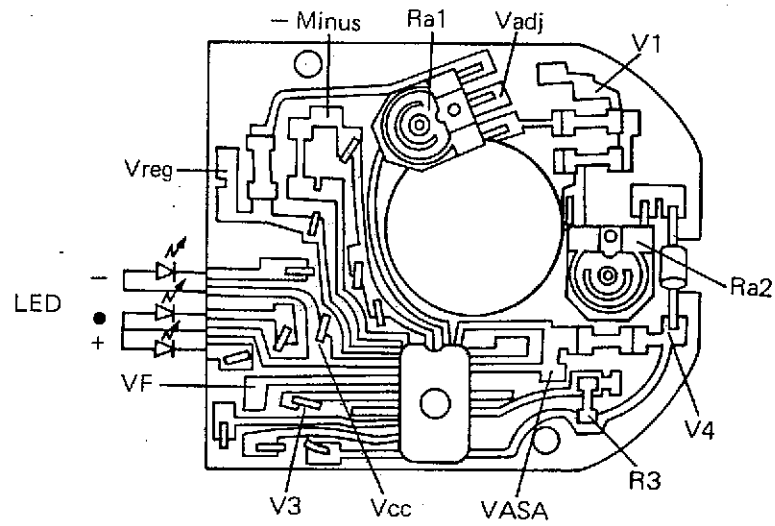
- **Reparing method of complete products**

  Remove the base cover and 2 pieces of cell case SS, pull out the cell cases, raise the mold plane in such manner as peel it off with tweezers, and again stick the moquette while lightly holding the mold plane on the body side. As leaving it as it is, check the shutter speed and then carry out the assembly.



FX-3 (147) Circuit



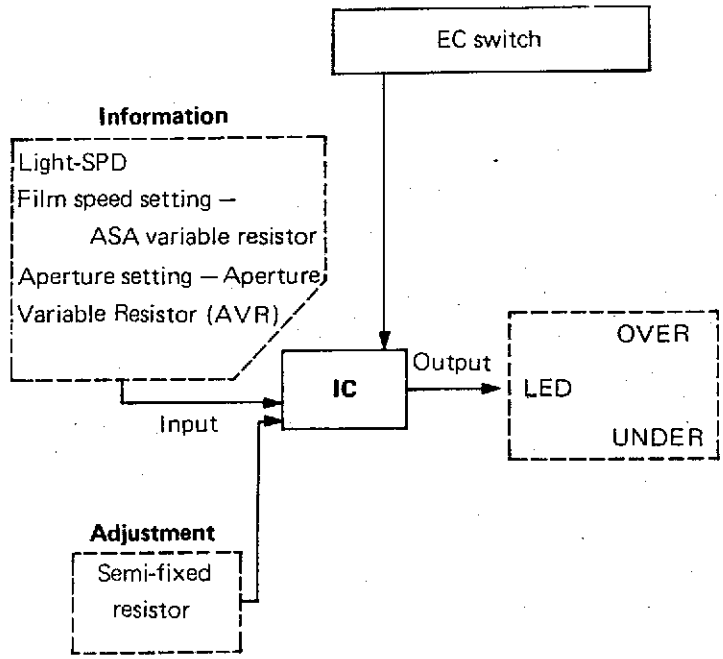


Composition of Circuits

The circuit composition consists of 4 components as shown in the left figure.

(1) Information
(2) Adjustment (Quantity of light)
(3) Output
(4) IC (Control)

Calculate and adjust information by IC; by using the result of which as output, LED is driven.



Role of Each Circuit (1/2)

A1: Logarithmic-compress the photoelectric current, calculate it with V_{ASA}, the result of which is, as V2, sent to A2.

Vreg: A constant voltage of 1.25±0.15V is generated independent of variation of a voltage (Vcc) from the battery.

Ra2: Adjust the voltage per EV of R_F and R_{ASA}.
The adjustment should be made to hold as follows.

$$Vreg - V1 = 226mV$$

A2: Calculate V2, the output of A1, V_F, the input of apperture, and Vadj, the input of light adjustment, the result (V3) of which is sent to A/D .
V3 indicates a change of approximately 30mV per EV.

Co: Amplifier for the battery checker; when Vcc becomes lower than 24V, a signal is sent to A/D to turn off the current of LED with the result that the LED is not lit.

A/D: A circuit to determine, depending on the voltage of V3 sent from A2, whether OVER, APPROPRIATE or UNDER of LED should be lit.
This is generally called A/D conversion.

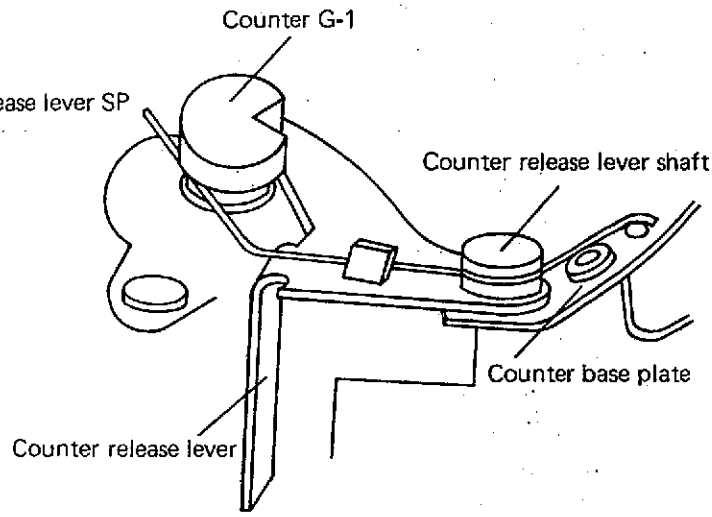
Operation of Counter

Phenomenon

The film counter does not advance when making the winding lever operate, and the latter half of the film counter slips. (It will advance while pressing the back cover.)

Cause

Although the counter G-1 engages the counter gear, yet the former slips and does not advance because the counter release SP is soft that pushes the counter G-1. (In case the spring is deformed during installation.)



Reparing technique and confirming method

- Check whether the counter release lever fully operates toward the counter G-1, and if the former is deformed, repair the defect to strengthen the force of the spring to push the counter G-1.
- First put the part of spring to press the counter G-1 against the latter, and place the spring in the catch of the counter release lever and next put the spring in the counter release lever shaft making a little free the wound portion at the central part of the spring, then apply the hook on the opposite side to the film counter base.

. . . . . .

Phenomenon

One operation of the winding lever makes an advance of film by 2 frames, or an unstable advance.

Cause

If there are burrs, scratches, etc. in the portion where the counter contacts the counter gear, the feed failure takes place.

1. When soldering the lead wire, the counter G-1 was deformed.
2. The corner was injured by the screw driver, etc.
3. There is a burr made in the course of work.
4. There are a scratch, chip, etc. in the counter gear.

Repairing technique and Confirming method

The failure in feed of the film counter should visually be found.

1 to 2. Replacement of parts.

3. Scrape off burrs. (Not partially, but totally scrape them off.)
4. When adjusting the A-gear stopper, the screw driver is apt to scratch it. If it is scratched, replace the counter gear.

Adjustment

Ra2: The volume to determine the amount of change per EV of aperture and ASA. Making the voltage of Vreg – V1 agree with 226±1mV.

R3: This is to change the lighting width of LED. Fixed resistance is soldered to it, being selected in the range from 6kohms to 10kohms.

Standard value: (1) + and green (●) are lit, Abt, 0.8 EV
(2) Only green (●) is lit. Ditto
(3) Green (●) and—are lit. Ditto

The standard resistance is 8.2 kohms; however, when it is intended to expand each lighting width, the resistance is decreased, and when it is intended to narrow the width, the resistance is increased.
However, it impossible to expand or narrow ● (green) only.

Ra1: This is semi-fixed resistance for adjusting the amount of light. With a flat light source, and setting aperture, ASA and shutter speed as properly selected, adjustment should be made so that only green LED (●) is lit.

Repairing Method

1. Not lit. (LED)
No current flows to AMP due to contact failure of EC switch or disconnection of white lead wire.

2. OVER is left lit.
(1) The voltage of RF is high, the sam as Vreg without any change. (Because of wiring or R2, Ra2 or D is out of order.)
(2) The voltage of RASA is high, the same as Vreg without any change. (Because of the same as above.)
(3) Vadj is low. (The leg of C4 shorts to the body.)

3. UNDER is left lit.
With respect to the phenomenon, reverse to para. 2. Short circuits of RF, RASA, Ra1, etc. including failure in SPD.

4. One or 2 of 3 LED's go on and off, but the remainder do not go on.
(1) Disconnection of soldered legs of LED.
(2) Disconnection of R5 through R7.
(3) Defective LED. Apply R-range of tester to (+) and LED (—) sides, and check whether LED's are lit.

5. The lighting width is broad.
Make R3 greater. (8.2 kohms to 10 kohms)

6. The lighting width of Green (●) is narrow.
Make R3 less. (8.2 kohms to 5.6 kohms)

7. GREEN is not lit.
UNDER is lit directly from OVER passing over GREEN. IC is defective, and AMP should be replaced.

Winding Mechanism

- The A-S'M set lever under the body moves to the spool side by means of the winding lever (147651), and sets the shutter and the mirror at the same time.
- Using cocking arm fixer Ass'y (066616), the winding can be made away from the set cam fixer (147610) together with SR lock lever (147439) until the winding is made halfway. The external circumference of the set cam clamp is used in the middle of winding so that the shutter release shaft is constructed so as for the release not to descent in the course of winding operation.
- The A-gear stopper pluges in the A-gear about 0.2mm immediately before the winding stops, and then the check pawl is released from the set cam plate.

Adjusting method of A-gear stopper
Rotate the A-gear stopper shaft (eccentric screw) (147618) to create an allowance of 0.2mm.

Adjusting method of check pawl
Loosen the screw (61814024) and make the check anti-rewind claw collar (147637) (eccentric colar) rotate for adjustment.

Winding Operation

Phenomenon

When gently returning the winding lever, it stops midway, and cannot return to the full.

Cause

Perform the winding until the winding lever engages the check anti-rewind claw, where the operation of the lever should be checked.

In case the lever does not smoothly move:

1. The winding lever edges up to the projection due to an inclination of the top cover.
2. No upward and downward plays are found on the Winding feeding plate ass'y and the winding lever base.
3. The clogging of the holes of the counter gear base and the winding feeding plate ass'y.

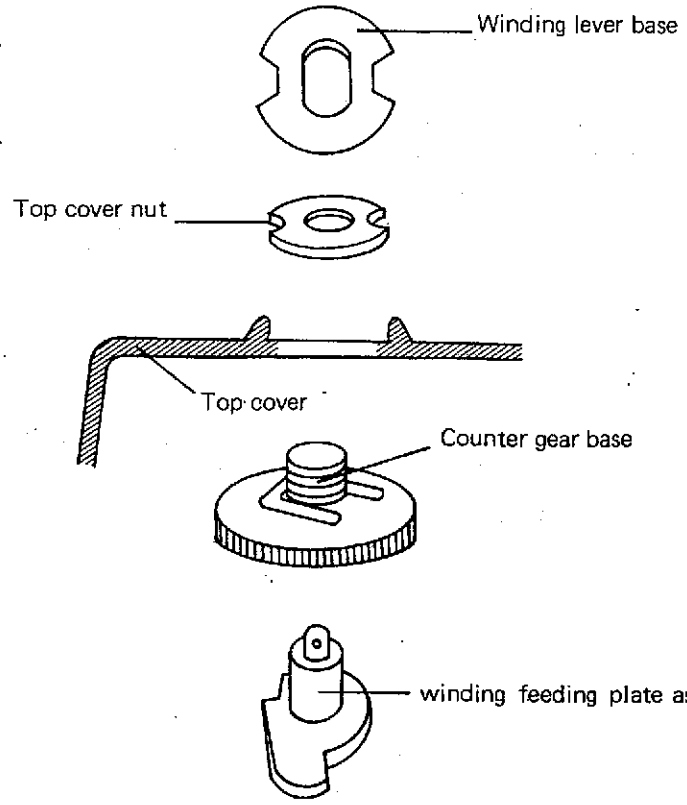
Repairing technique and confirming method

1. Install the top cover such that it is located at the central part of the winding lever.
2. Regarding paragraphs 2 and 3, check the shaft or base for dimensions, and replace one of them which is not acceptable.

   Note: Check the counter for advance, return, etc.

Faults that may occur

The winding lever fails to return.



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Phenomenon

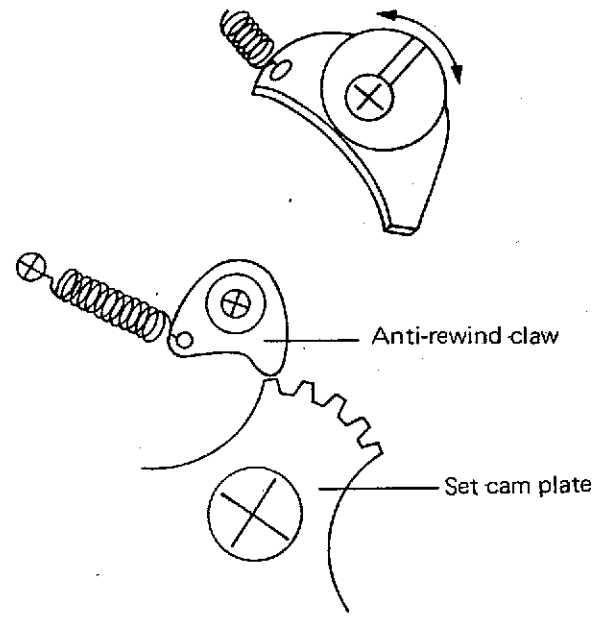
When operating the winding lever all the way, it comes to be out of order, so that it does not return by use of spring tension.

Cause

Because the check anti-rewind claw fails to free from the set cam plate when operating the winding lever for winding.

Repairing technique and confirming method

Remove the bottom cover, a little loosen the check anti-rewind claw caller SS, make the eccentric check anti-rewind claw caller rotate, and tighten the check anti-rewind claw caller SS while fixing the slotting part. The above operation should be repeated until a perfect operation is obtained.



Phenomenon

When gently returning the winding lever, the winding shaft and the set cam fixer do not return all the way, so that the shutter cannot be released.

Cause

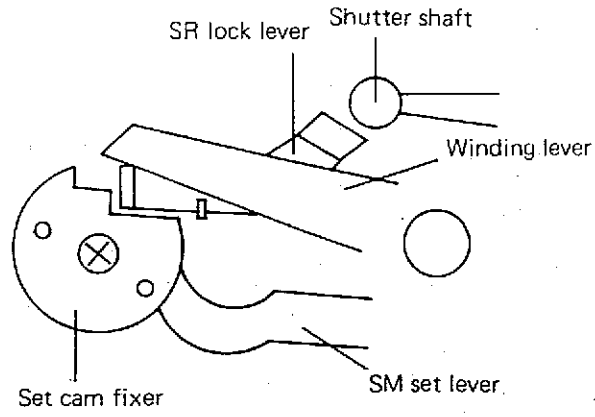
- There is no upward or downward play in the winding stopper and the set cam.
- The holes of A-gear holder and the winding shaft holder into which the winding shaft is put do not agree with each other.
- There is no play in the winding shaft and A-gear base, and no allowance is provided for inclination of the shaft.

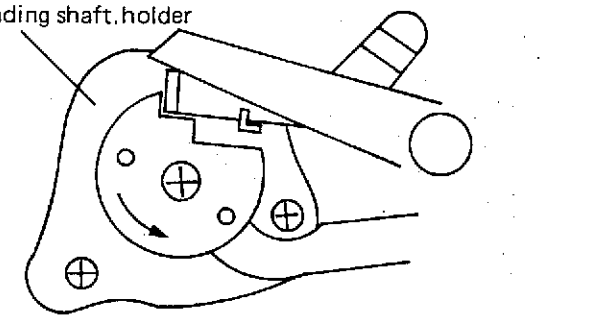
Repairing technique and confirming method

- Unless no play is provided upward and downward, remove the winding lever and lightly strike the winding lever shaft from above to create a play.
- Loosen 3 screws of the winding shaft holder, and again tighten the 3 screws at the position where the winding shaft rotates smoothly.

Faults that may occur

The winding lever does not return.





Shutter cannot be released

. . . . . .

Phenomenon

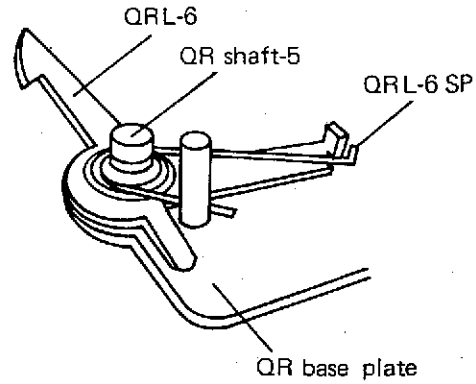
Concurrently with winding, the mirror moves up.

Causes

- QRL-6 SP is released from QRL-6, so that QRL becomes free and as a result, MCL-2 cannot be set.
- The part by which QRL-6 SP is connected to QR shaft-5 is short so that QRL-6 SP is disengaged during operation.

Repairing technique and confirming method

- Be sure to connect the hook of QRL-6 SP to the notch for engagement of QRL-6 SP.
- When installing QRL-6 SP, in order to prevent any deformation of it, confirm that there is a room that the part where the spring is engaged to QR shaft-5 can allow QRL-6 to move smoothly.



Phenomenon

Concurrently with the winding, the mirror moves up.

Cause

- GS' ring stopping QRL-4 is too stiff to be operated by the force of spring.
- A scratch made on the top surface of QRL-4 by use of the pliers when installing GS' ring produces burrs which cause dissatisfactory revolution.
- The gap between GS' ring and QRL-4 becomes greater with the result that QRL-4 comes to float, which causes the engagement of QRL-2 becomes insufficient.

Reparing technique and confirming method

- The clearance between GS ring and QRL-4 should be within 0.1 mm to 0.3 mm and GS ring, installed in parallel with QRL-4.

.....

Phenomenon

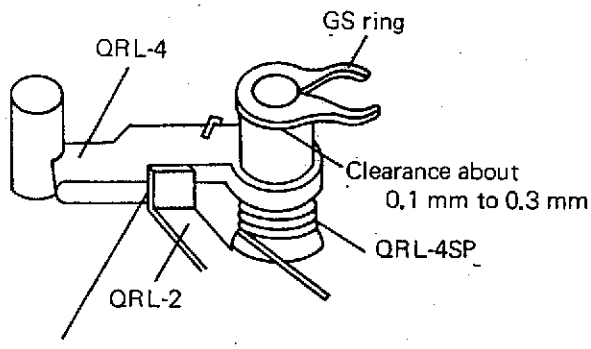
Concurrently with the winding, the mirror moves up.

Cause

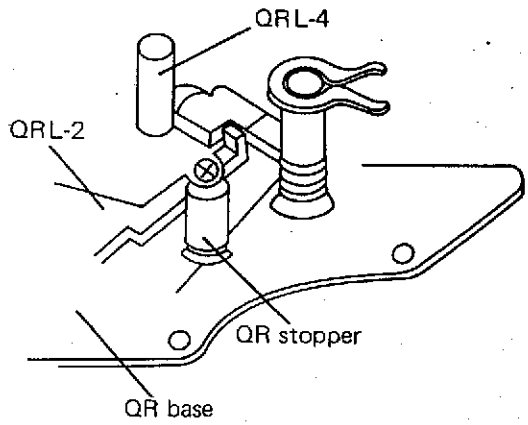
The side of QR stopper of QRL-4 SP pressing QRL-4 in one direction is released.

Repairing technique and confirming method

- Even if the released SP is engaged to QR stopper as it is, SP is apt to float, so that loosen QR stopper SS, put SP in between QR stopper and QR stopper shaft, and tighten SS.
- As the work standard has already been changed, confirm the standard is as such.



If the upward and downward plays of QRL-4 become greater, the engagement of QRL-2 becomes insufficient, and repeated setting causes the corner being flattened, and unsuccessful setting.

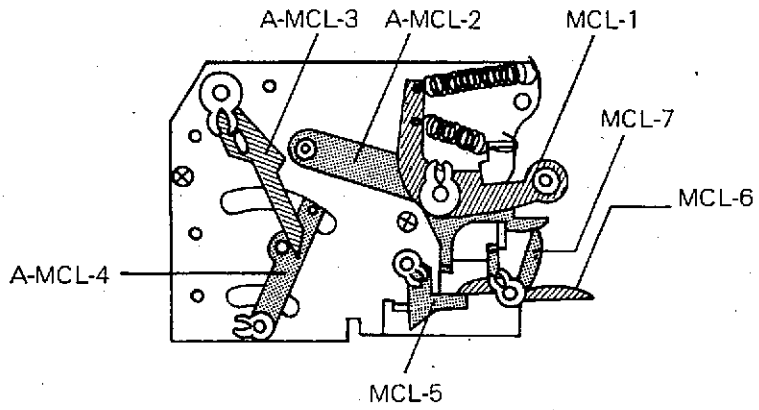


Mirror Box

Explanation of operation

- QRL-1 (065201) is set with winding operation.
- QRL-4 (147725) moves in the direction of arrow (up) by pressing the shutter release button, the tip of QRL-2 (065202) is released, striking against QRL-6 (139731), and A-MCL-2 (065212) is released, which causes A-MCL-3 (065213) to move, springing up the mirror plate by means of MCL-4 (065214).

MC Base Plate Ass'y



Operation of Mirror

Phenomenon

The mirror does not return even when it reaches the upper limit. The rear curtain does not run all the way, so that it is opened in a slit-shape at the upper side.

Cause

The sticking position of the shutter moquette (1) is not appropriate, so that the two-side adhesive tape of the shutter moquette (1) sticks to the rear curtain stop lever of the shutter; this causes malfunction of the stop lever, and as a result, the rear curtain does not stop.

Repairing technique and confirming method

- Stick the shutter moquette (1) to the outline of sprocket metal such that the former attaches closely to the latter. The shutter side should be free from a swelling of the shutter moquette (1).
- When the winding lever is set, be sure to confirm that the rear curtain is certainly set. It is necessary to make the confirmation half a day after the moquette is sticked.

Faults that may occur:

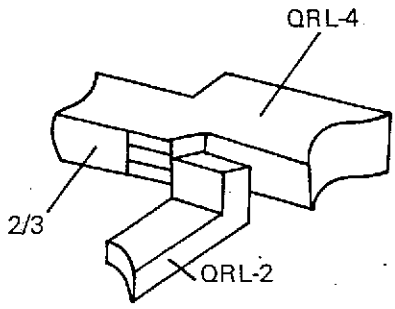
The mirror fails to return.

Phenomenon

Concurrently with winding up, the mirror moves upward.

Cause

Because of an inclination of the stake for QRL-2 metal and QRL-2, the engagement of QRL-2 with QRL-4 is insufficient so that the former is apt to be released from the latter.



Reparing technique and confirming method

- If due to the engagement of QRL-2 with QRL-4 being insufficient, they cannot be set, a little bend the tip of QRL-2 such that it engages QRL-4 by 2/3 of the thickness of the latter.
  Note: As QRL-2 is hardened, do not bend it too much.
- At the same time QRL-2 is corrected replace QRL-4 because its corner is flattened.

Faults that may occur

Concurrently with winding up, the mirror moves upward.

Phenomenon

Concurrently with winding up, the mirror moves upward.

Cause

SR lever (3) touches the rising part of QRL-1, so that SR lever (3) does not completely return, continuing pressing QRL-4; as a result, the engagement of QRL-2 with QRL-4 is insufficient, which causes them to have an aptitude to slipping.

Repairing technique and confirming method

- Bend SR lever (3) from the side touching QRL-1 by use of a screw driver of (−) No. 5 or so to such an extent that SR lever (3) does not touch QRL-1. If bending it too much, it will touch GS ring on the opposite side; therefore, use care in this work.
- The release position of the shutter release is apt to change, so that confirm the position.
- The normal clearance between SR lever (3) and QRL-4 is 0.2 mm or more.

Faults that may occur

Concurrently with winding up, the mirror moves upward.

Phenomenon

At the same time the film is wound up, the mirror moves upward. The shutter is set.

Cause

- Staking failure of QR shaft causes bending of the base.
- Clogging due to dimensional failure of QR shaft.
- Because of burrs in QR-6, or deformation.

Repairing technique and confirming method

- In case the base is bent, flatten it; QR shaft should be vertical.
- A burr, deformation, etc. of QRL-6 are apt to cause a break so that replace it.
- If a play is too great, setting of MCL-2 becomes unstable; therefore, use full care.

Faults that may occur

Concurrently with winding up, the mirror moves upward.

Phenomenon

When pressing the shutter button, the mirror moves up and the shutter is released, but the mirror fails to descend.

Cause

When the shutter is released, the rear curtain runs and presses MCL-5, actuating QRL-5 and releasing QRL-1, then causing the mirror to descend. However, if the clearance between MCL-6 and QRL-5 is large, and the installing position of the shutter is too high, the amount of press is short so that the mirror fails to return.

Repairing technique and confirming method

- Check the clearance between MCL-6 and QRL-5; it should be within 0.3 mm to 0.7 mm. When the clearance is large, make adjustment by bending QRL-5.
- In case the clearance between MCL-6 and QRL-5 is within the standard, the installing position of the shutter should be set lowered by about 0.2 mm to 0.3 mm.

Note: **When installing the mirror box, set the shutter and charge the mirror, then install the mirror box.**

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Phenomenon

When pressing the shutter button, the mirror moves up, and the shutter is released, but the mirror fails to descend; that is, there occur conditions that the film cannot be wound and the shutter, released.

Cause

If something should touch the rear curtain of the shutter or catch it when it runs, it cannot run all the way and the mirror release lever cannot press MCL-5 to the full with result that QRL-1 cannot be released from QRL-5.

Repairing technique and confirming method

- After removing the bottom cover, make the winding lever work releasing the winding lever or SR lock lever from the notch of the set cam clamp, and at the same time the lever returns, the shutter opens and the mirror descends. Thus, the next winding becomes normal.

Faults that may occur

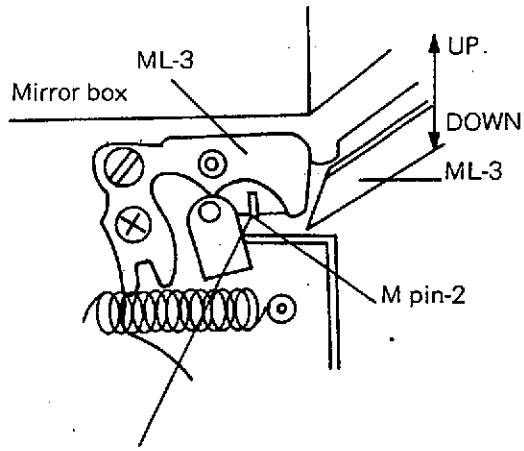
The shutter is released; however, the mirror is left up and does not descend.

Phenomenon

When reversing the camera and releasing the shutter, the mirror moves up, and when resetting it, there occur an off-set of mirror angulation and out-of-focus.

Cause

When with no clearance between ML-6 and M pin-2, the mirror moves up, their contact becomes particularly tight, and the mirror descends, but ML-3 malfunctions. This malfunction is caused by burrs at the slotting when tightening M pin-2.



Unless no clearance is present in this place, the mirror does not operate smoothly.

Repairing technique and confirming method

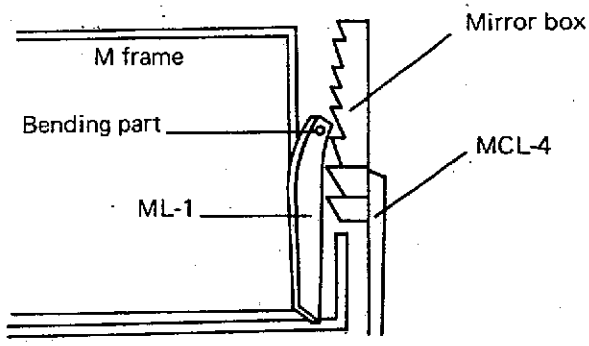
- The normal clearance between ML-6 and M pin-2 is 0.2 mm to 0.3 mm.
- When ML-6 touches M pin-2, a little open only the touching part of ML-6, and when the clearance is is not uniform with respect to up and down parts, a little twist ML-6 to make the clearance uniform.
- If there are burrs on M pin-2, scrape them first of all.
- When the clearance between M pin-2 and ML-6 increases, the mirror may be released due to shock, etc., so that the clearance should be 0.2 mm to 0.3 mm.

Faults that may occur

The mirror does not smoothly operate.
The mirror is not reset.

Phenomenon

When the shutter is released and the mirror moves up, or the mirror is manually lifted, some awkard movement of the mirror is felt, or the mirror fails to descend being left up.



Cause

- When crimping ML-1 to M frame, the former is deformed and its top with a groove parts outward from M frame with the result that it touches the inner wall of the mirror box.
- A step is created at the boundary between the light damping line on the inner wall of mirror box and the not-worked part, and ML-1 is caught by the step.

Repairing technique and confirming method

- When ML-1 parts from M frame, put a (—) screw driver in between them from the inner side of the mirror box to make both in parallel with each other.
- In case of touching the inner wall of the mirror box, remove the mirror box, put a washer in between ML-6 and M frame, and move M frame. In this event, confirm that the angle of the mirror is 45°.

Faults that may occur

The mirror does not operate smoothly.
The mirror is not reset.

Phenomenon

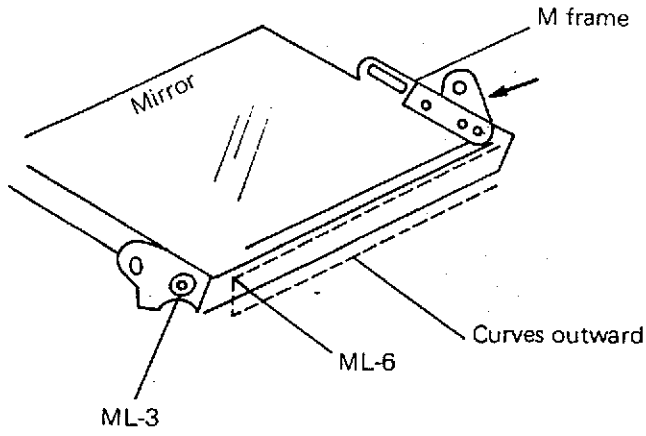
When reversing the camera, releasing the shutter, or moving the mirror by hand, the mirror fails to return all the way.

Cause

ML-6 is bent, and a washer is put in between M frame and ML-6. These cause M frame not to rotate smoothly.

Repairing technique and confirming method

- In case ML-6 curves outward, lightly press the curved portion at a place where the mirror stops. If the mirror moves thereby, there must be clogging at the right and left of the place; therefore, remove M frame ass'y and free M-SP, then observe the movement of M frame. In case the movement is felt heavy, correct the curve of ML-6.
- In case the movement is felt heavy due to the washer, remove the washer.



Faults that may occur

The mirror does not operate smoothly.
The mirror is not reset.

.....

Phenomenon

When moving the mirror upward by hand and gently returning it, the mirror does not return all the way, but stops its return immediately before the return is completed.

Cause

The corner part of M light damping paper touched ML-3 so that the return of the mirror is made not smooth.

Repairing technique and confirming method

- Hold the hair-graft part of the area where the corner of M light damping paper touches ML-3. Move the mirror upward, hold it by the left hand and slide right and left the corner part of the light damping paper about 10° with screw driver or tweezers by the right hand, then press the part several times.
- Deviation of M ligh damping paper from the correct position has an aptitude to touching ML-3, so that check whether there is such deviation.

Phenomenon

Move the mirror upward by hand and return it gently, and then the mirror is caught midway.

Cause:

- Up and down plays of MCL-3 are remarkable.
- Twisting of MCL-4 due to crimping.
- There is level difference at the crimp of MC-3 shaft.
- There is a play due to installation of MCL-4.

The tip of MCL-3 is caught by MCL-3 due to the above causes.

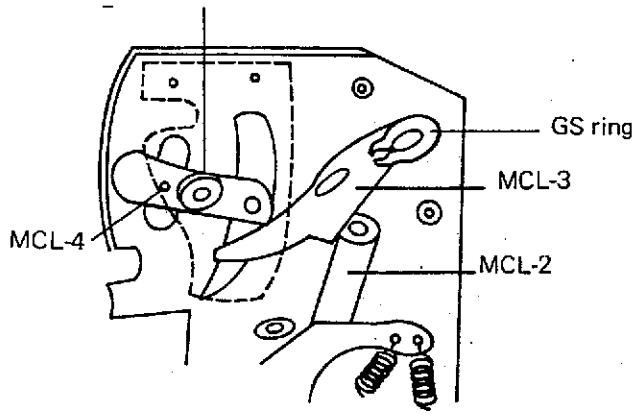
Repairing technique and confirming method

- In order to stop a play of MCL-3, GS ring should be stopped such that it is parallel with MC base, and the play should be stopped to such an extent as MCL-3 moves automatically lest GS ring should be too much opened.
- The play of MCL-4 should be adjusted with washer. In case of twisting and warping, they should be corrected by bending work such that MCL-4 becomes parallel with MC base.
- GS ring once used should not be re-used.

Faults that may occur

The mirror does not operate smoothly.

The shutter does not work.



Operation of Counter

Time of change: At the beginning of March 1980.

New indication: The last digit, A, is changed to B. (Indication of lot)

Example: ICB
BCB

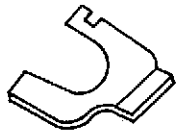
Interchangeability of parts;

Counter base ass'y is replaceable, but singles such as Counter
Counter clamp (147871)
Counter gear (147865) are not interchangeable.
Counter SP (147867)

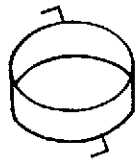
- Counter base ass'y Arr't No. 066830

* Sticking of Counter name plate (147864) will be made with the assembly of the body as before.

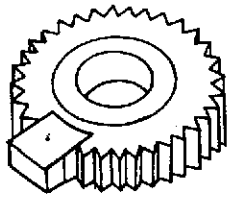
Old



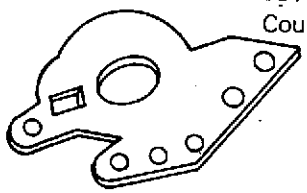
866
Counter SP post



867
Counter-SP



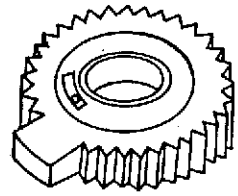
865
Counter gear



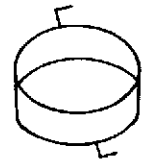
861
Counter base

New

87100
Counter clamp

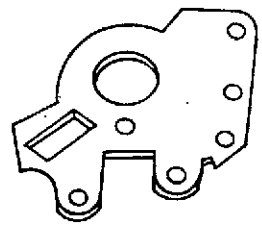


86520
Counter gear



86710
Counter SP

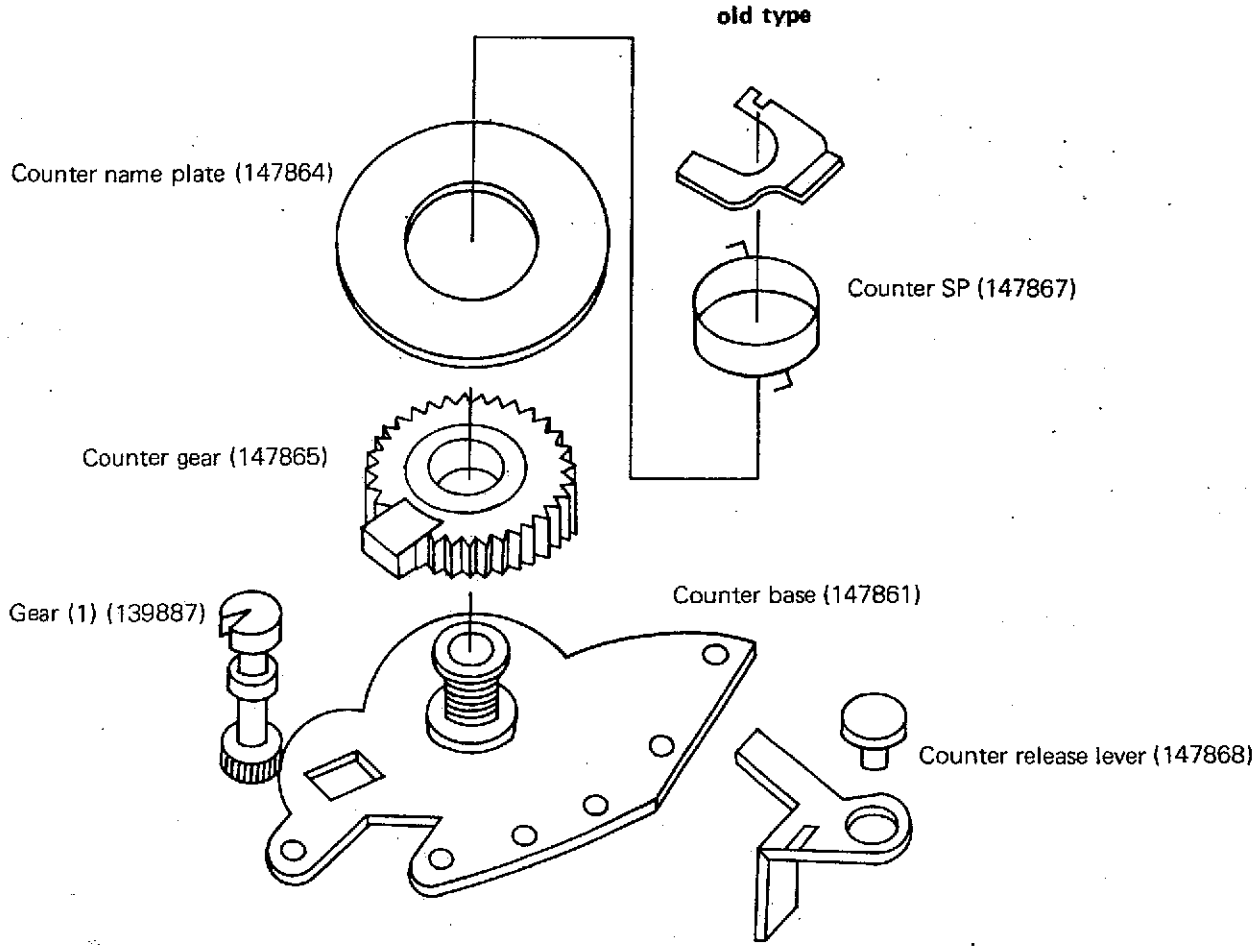
86210
Counter gear base



86110

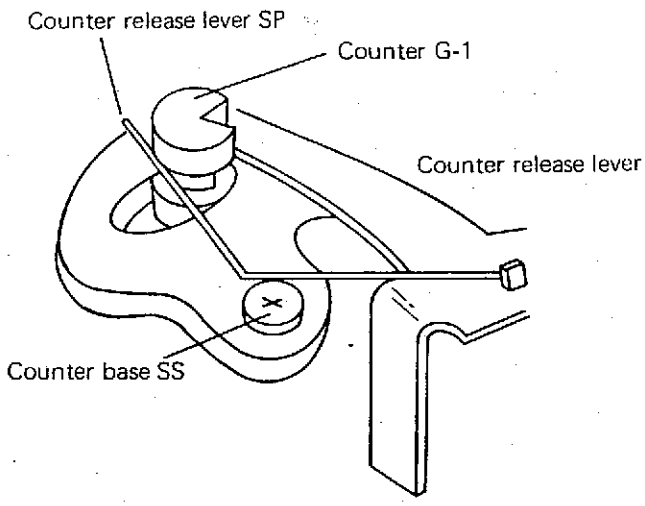
Description of Mechanism

- Push in the counter release lever (147868) by closing the back cover, and closely attach the gear (1) (139887) to the counter gear (147865).
- With one turn of the gear (1) made by once winding up, one tooth of the counter gear is fed by use of the notch of the head.
- After taking a picture, rewind the film and open the back cover; thereby, the counter is reset to return to "S".



Phenomenon

When the counter counts 36 frames or less and then the back cover is opened, the counter is not reset.



Cause

1. When forcibly tightening the counter G-1 before it completely enters the hole in case the counter base is installed, burrs are produced, so that malfunction of the counter G-1 is caused.
2. The counter release SP is clamped by the counter base SS with the result that malfunction of SP is caused.
3. Any blistering part of the sticked counter name plate touches the top cover with the result that the adhesives are pressed out and touches the counter SP hook.

Repairing technique and confirming method

1. When the movement of the counter G-1 is not smooth, replace it.
2. After tightening the counter base, hook SP.
3. If the name plate is blistering, peel off the name plate, remove the adhesives completely, and then re-stick the name plate.

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Phenomenon

Although the winding lever is operated, the film counter does not move from S, or advances intermittently. (If pressing the back cover, the counter advances normally.)

Cause

Because the back cover cannot push the counter release lever to the full, the counter G-1 does not perfectly engage the counter gear. Curving deformation.

Repairing technique and confirming method

- Visually check whether the phenomenon is caused by deformation of the back cover.
  (When winding the film while pressing the back cover, if the counter advances, there occurs a curve.)
- If there is a step between the surface of the lock plate cover and that of the back cover, the curved portion should be corrected.

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Phenomenon

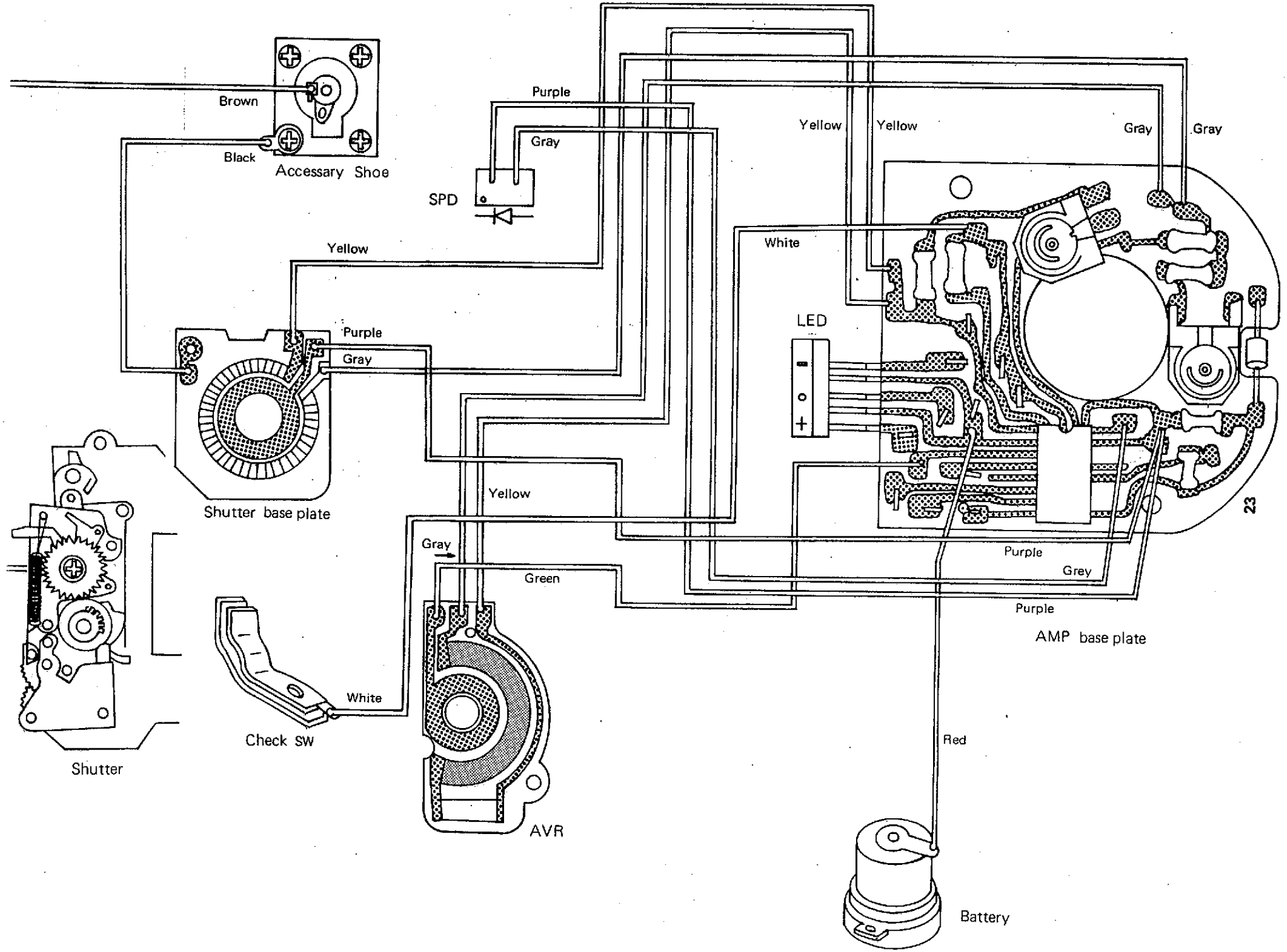
When the film counter counts 36 frames or less and the back cover is opened, the counter is not catches something in the course of return.

Cause

1. Tightening of the top cover nut causes the top cover to press the counter SP hook, so that the counter gear returns heavily.
2. Dimensional inaccuracy of the counter gear holder and the counter gear does not allow the counter SP hook to make engagement.
3. The counter reset SP gets jammed in between the counter SP hook and the gear. The reset SP protrudes from the gear and becomes entangled with the SP hook.

Repairing technique and confirming method

1. and 2. Loosen the top cover nut little by little, and if the counter returns, replace the counter SP hook with a new one.
   Confirm that there is a play between the counter SP hook and the gear.
3. Remove the counter SP hook and check the entanglement of SP. If there is a play in the counter SP hook, or the counter does not return from time to time though the gear is operated by fingers, press the end of the side without notch of the SP hook by use of a screw driver. Again operate the gear by fingers. The protrusion of SP is caused by deformation of the reset SP; correct it to its normal shape or replace it.


Brown
Black
Accessary Shoe
Purple
Gray
SPD
Yellow
Yellow
Gray
Gray
White
Yellow
LED
Purple
Gray
Shutter base plate
Yellow
Gray
Green
Purple
Grey
Purple
AMP base plate
23
White
Check SW
Shutter
AVR
Red
Battery